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ROSES

ROSA CANINA

(Dog Rose)

from Flora Danica.

ROSES: Their History Development and Cultivation

BY

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VICE-PRESIDENT OF THE NATIONAL ROSE SOCIETY

WITH COLOURED FRONTISPIECE
9 LITHOGRAPHIC PLATES AND OTHER
ILLUSTRATIONS IN THE TEXT

SECOND EDITION

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TO

THE MEMORY OF

A DEAR FATHER

JOSEPH PEMBERTON

A LOVER AND GROWER OF

THE ROSE

AND TO WHOM THE AUTHOR OWES SO MUCH

THIS BOOK

IS AFFECTIONATELY DEDICATED

PREFACE TO THE SECOND EDITION

THE first edition of this book being out of print, a call for a second edition was imperative. In preparing it an opportunity was afforded of revision and addition.

Since the first edition was issued, two new classes of roses, the Perpetual Flowering Musk and the Hybrid Lutea, have been recognised by rosarians. These classes have received attention in this edition.

Moreover, in view of the increased prevalence of the disease, Black Spot, in our rose gardens, a more extended notice of this fungoid pest seemed needful. So the note on Black Spot has been entirely rewritten, and for the help afforded by Mr J. Fraser of Kew in drafting this new paragraph, the author's best thanks are due.

In view of the more recent advance in the chemistry of soils and manures, Chapters VII. and VIII., which deal with these subjects, have been revised by a brother rosarian, Mr Richard Woosnam, Fellow of the Institute of Chemistry. The author is greatly indebted to him for his most valued assistance.

The Appendix of selected roses for general and special purposes has also been revised and, as far as possible, brought up to date. This was rendered necessary by the progress of the rose, a progress so rapid that roses which once were thought good have been superseded by improved varieties.

PREFACE

In the latter half of the nineteenth century the rose was regarded primarily as an exhibitor's flower, and books on its cultivation, although useful to all growers, were written chiefly from an exhibitor's point of view. But fashion has changed; the rose is now extensively grown for garden and house decoration, for which no flower is more adaptable or more popular. Species, hybrids of species, varieties old and new, summer flowering and perpetual, roses for pillars and pergolas, for bedding purposes and specimen bushes, all are in demand. The rose-grower's horizon is wider than it used to be, and it is in the hope of affording assistance in the cultivation of these many and varied classes of the Rose this book is offered.

Among the many kind friends who have assisted me in the preparation of this book I am greatly indebted to Alexander Dickson & Sons of Newtownards, the eminent raisers of new roses to whom I submitted the chapter on hybridisation; to Dr. Cooke, the author of "Fungoid Pests of Cultivated Plants," for his assistance in preparing the chapter on rose pests; to Mr. George Mount, of Canterbury, well known for his beautiful roses grown under glass; and by no means least of all to

Mr. E. T. Cook, the editor of *The Garden*, for reading the work in manuscript and giving me most valuable help.

I also tender my acknowledgments to the firm of George Bell & Sons for permission to make extracts from excellent works, "The Soil and its Management," by Dr. Fream, and "Manures and their Uses," by Dr. Griffiths; to the Royal Horticultural Society for extracts from the "Report of Conference on Hybridisation," and the sketch of mildew growth; to the Director of the Kew Herbarium for assistance and permission to copy plates of roses. I am also indebted to Mr. W. Paul's book, "The Rose Garden," and to Mr. T. Rivers' "Rose Amateur's Guide," and other authorities on the subject, a list of which is given at the end of the book. The sketches from which reproductions have been made, appearing in chapters on budding and pruning, are the work of my sister, Florence Pemberton.

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INTRODUCTION

Dean Hole, with whom I first became acquainted by meeting him in friendly competition in the "Wars of the Roses," has left it on record that his love for the rose was the result of a sudden conversion—a certain Gallica rose converted him. I do not think there was any sudden conversion, or conversion at all, in my case; I was raised in a rose atmosphere, and loved the rose when a child in petticoats.

We had a kind old man as gardener. I never knew his name until when my grandmother died he was pensioned off; we just called him "gardener," nothing more. He would bud red and white roses on the same standard, and the combination of Gloire de Dijon and Souvenir de la Malmaison was a favourite one of his. He used to make up such delightful birthday bunches, all composed of sweet smelling flowers. The style of those nosegays was early Victorian: a round, closely packed bunch of flowers, no foliage except as a border. Slightly raised in the centre would be a few blooms of Duchess of Sutherland, around which were rings of other roses, such as Léopoldine d'Orléans, Félicité et Perpétué, Aimée Vibert, or white pinks, with possibly a ring of pink ones to match the centre, to give the bunch a finish, and, after a considerable amount of bast had thus far

been consumed, the whole was encircled by a frill composed of scented foliage of geranium. Just imagine how delicious was the perfume of a bunch like this! What would he have thought of the modern scentless roses!

We had other roses in the garden besides those mentioned, but the old ones were bushes on borders or in odd corners, where they had been thrust to make room for the then more fashionable standard—bushes of Maiden's Blush, Old Cabbage, Red Provence, Tuscany, Lucida, Alpina, the Old Monthly, the Common Moss, and others. We did not in those days trouble about names; we gave them names of our own, such as "Aunt Helen's Rose," Aimée Vibert; "Grandmother's Rose," the little Rose de Meaux; "Aunt Betsy's Rose," the common red China, and others. I do not like using the term common; the roses were not common in our eyes. In the centre of flower beds and along the borders of the middle walk of the walled-in kitchen garden we had standard roses in company with gooseberry and currant bushes. Some that I can recall to mind were, Sir Joseph Paxton, Mrs. Bosanquet, La Reine, Madame Laffay, Jules Margottin, Générale Jacqueminot, and two perpetual-flowering moss roses, Madame Ory and Salet. Of course, we had several standards of Gloire de Dijon and Souvenir de la Malmaison—everybody had, they bloomed so early and so late.

My early recollections of church-going are associated with roses. We went every Sunday morning to an old Queen Anne church: ours was a square pew; the pew-opener, a woman, walked before us, opened the pew door

and shut us in. We sat round facing one another, but could not see anything except the gallery having the royal arms in the centre, the children who sat there with the village schoolmaster, who was also parish clerk and gave out the hymns. When standing-up time came I had to stand on the seat to see over the top of the pew. In a neighbouring pew there was a gentleman who appeared every Sunday with a rose in his buttonhole: I admired that rose, and resolved to wear as good if not a better one the next Sunday. During the week I was on the look-out for a suitable one, and when Sunday came again it was gathered—Moss, White-crested Moss, Red Provence at first, and then Baron de Maynard or Boule de Neige were favourites. I appeared with my bloom, and when the time came to mount the seat compared it with the rose in the buttonhole of my rival. The result of the judging was usually adverse to me, but I always went home hoping for better luck next time. My flowers were handicapped by the staging; you see, I was in petticoats at first and wore a light-coloured Norfolk jacket, large mother-of-pearl buttons down the front, and a belt. My rival had a black coat, and the rose had a buttonhole all to itself; there is nothing like black to set off a rose, especially when added to this the flower did not have to share the buttonhole with a large button. I was quite aware of the drawback, and longed for the time when I might have a cloth jacket with a buttonhole at the side.

Then came a time when I had a small garden of my own. There were three standards in it—red roses; I did my own pruning, but they hardly ever gave me

a Sunday buttonhole; the situation was too shady, and there were laurels close by. When about twelve years of age my father showed me how to bud. My first attempt was to bud a White-crested Moss; it was a failure, however; father said the stock did not run, but I am now inclined to think the budder bruised the bud.

My father used to go to the Crystal Palace rose show, and sometimes took me with him. On one occasion I had in my buttonhole a grand bloom of Marie Baumann. I remember that flower so well, and how the people seemed to look at it as we walked over London Bridge together; I felt sure by the way they looked that we should not see a better one at the show. I liked those visits; they meant more standards in the autumn from Rivers. Not that father relied altogether on what he had seen at the show; before ordering them he would consult a man who budded for Rivers. He kept pace with the times, and had a book which he read a good deal, "The Rose Amateur's Guide," by Thomas Rivers: I have it still. Some of the roses we then had as standards were, Senateur Vaisse, Générale Jacqueminot, John Hopper, Comtesse de Chabrillant, and Madame Bravy.

When going back to school in September, I used to take with me a pointed flower of Souvenir de la Malmaison, packed in an empty barley-sugar tin; it kept fresh in that tin box for a long time, and daily I would take it out, admire it, and recall happy memories of home of which it reminded me. Brown and battered I brought it home with me at Christmas. The peculiar perfume of a Souvenir de la Malmaison—a kind of beery smell—reminds me to this day of the rose in the barley-

sugar box; and although so long ago the standard from which those blooms were gathered is with us still.

My father, however, never exhibited, but in the summer of 1874, the summer that followed his death, I ventured on my first attempt. I went round the standards the day before the show and found we could just get twelve varieties. Assisted by the gardener we borrowed a chrysanthemum stand with legs and tubes: we covered the board with lycopodium on which the roses rested, cut with foot-stalks only, no foliage; the man said that was the proper way to do it, but having been to the Crystal Palace, I had my doubts. Although we had only the twelve roses and did not take any extra blooms yet the stand won second prize. That did it; from henceforth I was on the warpath; fifty standards were ordered from Rivers, and a piece of the kitchen garden was prepared where they could grow all by themselves free from gooseberry bushes. The next year I went to two local shows, and in 1876 to the Alexandra Palace and Crystal Palace exhibitions, where Mr. Benjamin R. Cant and Mr. George Prince took me in hand, giving me advice in staging and kindly encouragement. So that now I can look back upon thirty-two years of rose-showing and to having exhibited at every metropolitan show of the National Rose Society, including the first, held at St. James's Hall, and at which I was awarded second prize for twelve roses in a class in which there were forty competitors.

A word or two on the return into favour of the decorative roses. I know you will dub me an egotist, but bear with me. In the days of which I have been

writing exhibition roses only were staged; there was no class provided for the old-fashioned roses—they, like Cinderella, were left at home. One year, I forget which, when the National Rose Society held its exhibition at South Kensington, round the corridors that ran into the conservatory then adjoining the Albert Hall, I took up a box of Cinderellas—Maiden's Blush, Aimée Vibert, Rosa Mundi, Red Provence, and Lucida were some of them—and staged them, not for competition, labelled "Grandmother's Roses." That box attracted considerable attention; folks discovered old and forgotten favourites, and I have been told the demand for them and impetus given to raise the modern decorative roses is owing in part to that exhibit.

Pardon these personal recollections, and please understand that they are given simply that you may see how I served my apprenticeship, and why this book has been written.

PART I

THE ROSE

ROSA DAMASCENA VARIEGATA
(*half natural size*).
"YORK AND LANCASTER,"
From 'Les Roses,' par J. P. Redouté.

ROSES

CHAPTER I

THE ROSE, THE FLOWER OF ENGLAND

"You violets that first appeare,
By your pure purple mantles known,
Like the proud virgins of the yeare,
As if the spring were all your owne;
What are you when the Rose is blown?"

—Sir Henry Wotton.

Yes what are violets, and not violets only but all other flowers "when the Rose is blown"? Rightly has the rose been taken as the symbolic flower of England. What flower more popular? What flower has a longer season? Bear in mind the rose is not an exotic; the original species being all included between the 70th and 20th degrees of northern latitude. Half the known species come from Asia: from the Russian empire and countries adjacent, from Persia, Northern India, China, and Japan. Europe, it is stated has twenty-five species, of which five-sixths exist between the 50th and 40th degrees of latitude. Great Britain claims sixteen, Denmark seven, so that in the United Kingdom and in the country of our beloved Queen the rose of nature is quite at home.

How glorious in June are the country lanes of

England; grand arching sprays of *Rosa canina* are found everywhere, bearing flowers of the palest pink to deeper red according in part to the nature of the soil in which the plant is growing. And there is the *arvensis* of the woodlands, *spinosissima* of the moors, and *rubiginosa*, better known as sweet-brier, or, as our Essex children call it, "Sweet Maria," some of the best known wild roses of England with which Flora decks our way.

As the emblem of youth the rose was dedicated to Aurora; of love and beauty to Venus. It was given by Cupid as a bribe to Harpocrates, the god of Silence, from whence originated the custom among northern nations—the rose countries—of suspending a rose from the ceiling at meetings where secrecy was enjoined and matters discussed *sub rosa* and doubtless it thus found a place in our early national councils. Roses were employed by Roman emperors as a means of conferring honours on their most famous generals, granting them permission thereby to add a rose to the ornaments of their shields. Vestiges of this may still be seen in some armorial bearings.

At the present time the rose is used by his Holiness the Pope when desiring to confer special recognition on a sovereign, church, sanctuary, or country. "The Golden Rose," as it is called, used to be a single flower, but it now comprises several flowers and leaves of pure gold, with a principal flower at the top; the flower an emblem of the mortality of the body, the metal the immortality of the soul. The first instance on record of this gift is when, in 1366, Urban V. presented it to Joanna of Navarre. It was conferred on Henry VIII.

of England in his young days, before he came under evil influence, for the book he wrote in defence of the sacraments. Mary I. was another recipient.

"Somewhere about the year 1277," says M. Opoix, an old French authority on the rose "a son of the King of England, Count Egmond, who had taken the title of Comte de Champagne, was sent by the King of France to Provins, with troops, to avenge the murder of the mayor of the city, who had been assassinated in some tumult. He remained at Provins for a considerable period, and on his return to England took for his device the red rose of Provins, which Thibault, Comte de Brie, had brought from Syria on his return from a crusade some years before." This Egmond was Edmund Langley, second son of Henry III. of England, and first Earl of Lancaster. Here we have the origin of the badge of the House of Lancaster, adopted long before the Wars of the Roses. It is not certain whether the rose in question was *R. gallica*, sometimes called "Rosier de Provins," or *R. damascena*, the wild rose of Damascus, for both were cultivated at Provins.

As to the rose known as "York and Lancaster," of which we shall have more to say later, Nicholas Monardi, a writer of the early seventeenth century, in his monograph on the roses of Persia, shows that it was known in England in 1575, and describes the flowers as "inter album et rubrum medium colorem sortiuntur." We recognise it under this description; it is moreover possible to find on a bush flowers wholly deep pink and wholly white, and Shakespeare may therefore have some ground for the following incident:—

IN THE TEMPLE GARDEN

Plantagenet. Let him that is a true-born gentleman,
And stands upon the honour of his birth,
If he suppose that I have pleaded truth,
From off this brier pluck a White Rose with me.
Somerset. Let him that is no coward nor no flatterer,
But dare maintain the party of the truth,
Pluck a Red Rose from off this thorn with me.
Warwick. I love no colours; and without all colour
Of base insinuating flattery,
I pluck this White Rose with Plantagenet.
Suffolk. I pluck this Red Rose with young Somerset;
And say withal, I think he held the right.
Vernon. Stay, lords and gentlemen; and pluck no more
Till you conclude—that he, upon whose side
The fewest Roses are cropped from the tree
Shall yield the other in the right opinion.
Somerset. Good master Vernon, it is well objected;
If I have fewest, I subscribe in silence.
Plantagenet. And I.

—*Henry VI.*, Act ii. scene 4.

And this reference to the Wars of the Roses brings to mind an incident of local history. From the time of Saint Edward, King and Confessor, to the reign of Charles II., there were in Havering-atte-Bower two royal residences: The Bower, in Havering Park, the hunting-box of the reigning sovereigns, and Pyrgo Palace, the dower-house of the Queens-Consort. When Edward IV. of the House of York married Elizabeth, widow of Sir John Grey, a Lancastrian knight, the manor of Pyrgo was made over to her, and her adherence to the House of York was to be attested by a graceful act. Elizabeth held the manor on payment annually of a certain fee: that of presenting the King every year in the rose month

a white rose on the feast of the Nativity of St. John Baptist. This was a yearly reminder to Elizabeth and evidence to the King's supporters that, although she was once the wearer of the Red Rose, now as Queen-Consort of Edward IV. she belonged to the House of the White Rose. The rose was doubtless gathered in Pyrgo Palace gardens. Thus Elizabeth was the Rose Queen of Havering-atte-Bower.

CHAPTER II

THE BOTANY OF THE ROSE

BEFORE proceeding to treat of the various rose species or families, an elementary botanical knowledge of the rose will be helpful. In most gardens where space is afforded for shrubs, especially if it is an old garden, the English dog-rose, or *Rosa canina*, is certain to be found growing. It may have been planted, it may have been sown by birds, or, what is more likely, it is the original stock on which a cultivated summer-flowering, hybrid china, or hybrid perpetual was once budded. The rose is dead; the stock remains, and, freed from its trammels, is flourishing on its own account. Here it is, growing out of and above a clump of rhododendrons. Let us examine it closely.

Notice first of all the long shoots which the plant is sending up from its base. These strong growths are called *suculi*, and are made, in the case of *R. canina*, in July and August, or as soon as the crop of flowers is over. By producing these shoots the plant is providing for next year's flowering. Of pruning we shall deal later on, but it may not be out of place to note in passing that all summer-flowering varieties—and by summer-flowering varieties is meant varieties that have only one crop of flowers—send up these strong growths as soon as the flowering season is over. As it is from

ROSA LYELLI (*from Lindley's "Rosa Monographia"*)

A. Prickles.—B. Pubescence.—C. Stipules.—D. Bracts.—E. Calyx.—F. Petals.—G. Stamens.—H. Footstalk.—I. Leaf, seven-foliate.

these shoots the next year's crop of flowers is to come, it is a great mistake to prune them—a point overlooked by many people.

Next examine the older and harder-looking shoots, the *sarculi* of last year. These shoots have started into growth at certain distances from base to tip. This was done in the spring. These secondary shoots are known as *branchlets* or laterals. From the tips of the *branchlets*, in the majority of rose species, come the flowers; but in the case of the *R. canina*, which we are now inspecting, and indeed of all brier roses, it is not so. Unlike other roses, the brier produces its flowers from a third growth, about 6 inches in length, starting from the *branchlet*. It is important to remember this when pruning or thinning plants of any of the brier order.

We now come to the thorns on the shoots. Thorns of all kinds, large and small, with which this and other species are furnished, are termed *arms* because the plant is armed with thorns to protect it from many of its enemies. The largest of these thorns are called *prickles*. Those of the *R. canina* are broad at the base where they spring from the shoot and instead of being straight are curved or hooked. It is from the shape of these prickles, shaped like a dog's tooth, that the name *canina* is supposed to be derived. In determining the classification of any given species the prickles are an important feature, regard being given to their shape, colour, and position on the stalk.

In addition to the prickles there are frequently found many smaller arms. Comparatively few in the dog-rose; but in some species the wood is so thickly

clothed with them that it is difficult to grasp the stem. These smaller thorns are termed *setæ*.

And smaller arms even than *setæ*, with which not only the wood but also the leaf is covered, are known as *glands*. Pass your finger lightly along the under side of the dog-rose leaf, and these glands are at once detected. Some kinds of roses, notably the moss rose, are literally covered from head to foot with glands. These are the secreting organs from which, as in the case of *R. rubiginosa* and *R. alpina*, for instance, a distinctive perfume is derived.

And this does not exhaust the armature of the rose; there is something more minute than glands, for we can detect on wood, leaf, and calyx of some species a kind of downiness caused by the presence of short hairs. This is termed *pubescence*, the presence or absence of which affording great help in naming the rose. These hairs give rise to the following botanical terms: *pubescent*, when the hairs are short, soft, and thinly placed; *pilose*, when they are long, soft, and thinly placed; *tomentose*, when they are short, soft, and closely placed; *villous*, when they are long, soft, and thickly placed; *hirsute*, when they are long, harsh, and thickly placed.

Leaving the wood, we must now inspect the leaf. Every one who exercises the power of observation even to a limited extent is aware how much the leaves of different species, and of hybrid roses also, vary both in form, shade, and texture, so that it is quite possible even for the beginner in the science of rose-culture to name a particular rose from the leaf almost as easily as from the flower. For instance, a friend brings you a red hybrid perpetual to name. From the flower you have an

idea that it is Duke of Edinburgh, but you have your doubts; it is variable in colour. You at once look at the leaf; there is no mistaking the leaf of Duke of Edinburgh, it is perfectly distinct from the leaf of any other hybrid perpetual, and if you have never observed this, get a leaf and see for yourself. There are parts of the leaf of considerable value in determining the classification of species. These are the small leafy strips starting and growing up the sides of the leaf-stalk and are called *stipules*. As a practical illustration, examine the leaf of Gustave Piganeau, hybrid perpetual. Here again there is no necessity for having a flower before you, the rose is recognised at once by the distinctive formation of the stipules; they are lyre-shaped.

In the space between the leaves and the foot-stalk of the flower are found a sort of malformed leaves like broad blades of grass. These are called *bracts*, and are very characteristic of certain species. It is from the axils of these bracts that the flowers grow.

Another variable feature of the rose, apart from the actual flower, is the hep or *fruit*. In the dog-rose before us, as we all know, it is red and oval in shape. In the sweet-brier the fruit is a darker red and less oval. In some varieties it is long like a sausage, as in *R. alpina*, or like a dark-red gooseberry, as in *R. pomifera*, whilst in others as in *R. spinosissima*, it is quite round, almost purple or black. There is as much if not more variation in the fruit of the rose as there is in the apple, and as the fruit remains on the plant until far into winter, and long after the plant has shed its leaves, the fruit greatly assists us in the determination of the variety.

Let us now turn our attention to the flower itself. Examine a bloom of *R. canina*. It consists of two principal parts: the floral envelope and the sexual organs. The smooth stem starting from a joint at the last leaf or bract is called the foot-stalk. It terminates with a green urn-shaped pod termed the *calyx*. The diagram on page 233, giving a section of the rose, will assist us in understanding its formation.

Springing from the calyx, and strictly speaking part of it, are the *sepals* (*a*), five in number, serving as the outer covering of the organs of reproduction. A variety with long and broad sepals, which completely envelop the bud up to the very tip in its early stage, as in the case of hybrid perpetual Mrs. John Laing, is more proof against frost and other climatic changes than, for instance, hybrid perpetual Charles Lefébvre, where the sepals are short and narrow, and which therefore fail to protect the petals entirely.

The *petals* (*b*), likewise five in number, serve as the inner covering of the reproductive organs until these are fully developed. Then the petals unfold and expand. In popular estimation the petals are the principal part of the flower, but nature, as we have already stated, intends them as the inner wrapping to the more delicate parts; those which are absolutely essential to fructification. When the flower is young the petals are packed tightly together, and are shapeless, like the wings of a butterfly or moth just emerging from the chrysalis. And just as the wings of the butterfly, in the first few minutes after its development as the perfect insect, expand and smooth out in all its beauty, so do the petals of the *R. canina*

and other single flower roses. To know the age of a blossom of a single-flowering variety we must look at the stamens. When the flower is young the stamens are a bright golden yellow, but after a few hours, in the case of *R. canina* and many others, they turn black and the flower loses its freshness. This is especially noticeable in *R. multiflora simplex*. In gathering fully expanded single-flowering roses, therefore, the condition of the stamens should be noticed. If these are bright the flower is one of to-day, if dull or black the flower is one of yesterday's blooms; it is old and will soon drop its petals.

The *stamens* (*c*), to which we have already alluded, consist of stalks or *filaments* and a head or *anthers* containing a yellow powder named pollen.

The *pistils* (*d*) are hollow tubes numbering between fifteen and twenty, which spring up from the seed-pods or *ovaries* contained in a hard case called *pericarps* (*e*). The pistils in some species are surrounded by a ring or *disc*. Each pistil has at the tip a viscid secreting space termed the *stigma*. The pollen of the anthers falls upon the stigma and descending the tube of the pistil fertilises the seed in the ovary. This process, when confined to the stamens and pistils of the same flower, is called self-fertilisation, but when the pollen of one species is placed upon the stigma of another, it is termed cross-fertilisation. It is by cross-fertilisation, performed artificially, that we now obtain the best of the new varieties of roses. But the further consideration of this process we must defer for another chapter.

From the study of authorities, the botanical classification of the genus *Rosa* seems to present as much

difference of opinion to the botanist as that of the cultivated inter-bred rose does to ordinary rose-growers. I offer no opinion, but have thought it best to follow the classification on the lines laid down by the late M. Crepin, one of the greatest of authorities, and given in the valuable list of roses, cultivated by M. Gravereaux at L'Hay, published at the office of the *Journal des Roses*.

Rose species are grouped in sections according to the special characteristics of the wood, prickles, foliage, flowers, and fruit; it will be sufficient for our purpose to enumerate them, adding a few brief remarks.

Section.	Characteristics.
I. *Synstylæ* . .	These roses and *stylosæ* are perfectly distinct from all the rest in that the styles, instead of being free, are united, and rise above the disc in a slender column about the same length as the interior stamens. In the *synstylæ* the inflorescence, or the manner in which the flowers are arranged, is many flowered; stems long, climbing or creeping.
II. *Stylosæ* . . .	Inflorescence generally few-flowered; prickles stout, curved.
III. *Indicæ* . . .	Styles free and rise above the disc about half the length of the interior stamens; sepals reflexed; inflorescence generally several-flowered.
IV. *Banksiæ* . .	Styles free; sepals reflexed after flowering; stem unarmed, with slender climbing shoots; inflorescence many-flowered in a false umbel; leaves free from pubescence, except at base.
V. *Gallicæ* . . .	Styles and sepals as No. IV.; stems erect; inflorescence one, rarely several-flowered; prickles hooked, broad at base, scattered.
VI. *Caninæ* . . .	Styles and sepals as No. IV.; stems arching; inflorescence usually several-flowered; prickles stout, shaped like a dog's tooth.

Section.	Characteristics.
VII. *Carolinæ* . .	Styles free; inflorescence usually several-flowered; leaves lanceolate, 7–9 foliate; sepals long, narrow. Stipules unusually long, curving over leaf-stalk.
VIII. *Cinnamomeæ* .	Styles free; sepals erect after flowering; stems erect; inflorescence usually several-flowered; prickles straight, in pairs at base of leaves.
IX. *Spinosissimæ*, or *Pimpinellifoliæ*	Styles, sepals, and stems as No. VIII.; stems densely clothed with aciculi; prickles straight, slender, scattered.
X. *Luteæ* . . .	Leaves spoon-shaped, incurved, usually 9-foliate; stems dark brown; prickles pale, straight, scattered; flowers yellow.
XI. *Sericæ* . . .	Stems brown, stiff, straight; prickles very large, in pairs; inflorescence one-flowered; stipules long, narrow, concave, without pubescence.
XII. *Minutifoliæ* .	Middle leaves 7-foliate, sepals erect; prickles straight, slender, alternate, mixed with numerous aciculi.
XIII. *Bracteatæ* . .	Middle leaves 9-foliate; sepals reflexed; disc very large; stamens very many; stipules and bracts deeply incised; prickles hooked or straight, in pairs below the leaves.
XIV. *Lævigatæ* . .	Leaves ovate-lanceolate, tri-foliate, shiny, free from pubescence; sepals erect after flowering; stems long; prickles falcate, scattered.
XV. *Microphyllæ* .	Leaves 11, 13, 15-foliate; sepals erect after flowering; fruit prickly; prickles straight, in pairs below the leaves.
XVI. *Simplicifoliæ* .	One species only of this section, *berberidifolia*, a dwarf shrub, with cistus-like yellow flowers marked with crimson, the leaves simple instead of being composed of several leaflets, devoid of stipules.

From these sixteen sections all our modern hybridised roses have come, and the table given below is an attempt to indicate, however imperfectly, the section, species, and

sub-species from which they have originated. When a rose has reached the hybrid stage the name of one or two varieties of the class is given. If we examine the table we shall notice two things: (1) the distance removed from the original species of the hybrid tea, and (2) that there are many species from which little, if any, advance has been made. They remain as they have come from the hand of nature; they have no progeny. Does not this fact indicate the wide field still open to hybridists for the production of new roses; how much remains to be done in directions other than crossing and inter-breeding hybrid teas? And further, does it not suggest the probability that, great as the progress of the rose has been in the nineteenth century, it will be greater still in the twentieth, and that some of the most beautiful varieties of the genus *Rosa* are yet to come.

Analysis of Species

Division.	*Species.*	*Sub-Species.*	*Hybrids.*
Synstylæ	Arvensis	Ayrshire	Dundee Rambler
	Moschata	Brunonii	.....
		Grandiflora	.....
		Moschata alba	Hybrid Musks
		Pissardii	.....
	Multiflora	.....	Aglaia
	[illegible]		Crimson Rambler
			[illegible]
	Rubrifolia	.....	.....
	Setigera	.....	.....
	[illegible]	.....	Léopoldine d'Orléans
			[illegible]
	Wichuraiana	.....	Jersey Beauty
			Dorothy Perkins
Stylosæ . . .	Stylosa	.....	.....
Indicæ .	Indica	Indica sanguinea	[illegible]
	Semperflorens	.....	Noisettes
			Chinas
		Indica [illegible]	Tea Scented
			[illegible]
			[illegible] and Lancaster
Gallicæ . . .	Gallica	[illegible]	Cabbage (Hybrid Perpetual) — Hybrid Tea
		Centifolia or Provence	Four Seasons
		Muscosa	Moss
		Alba	Maiden's Blush
Banksiæ . .	Banksia	.....	.....
Caninæ . . .	Canina	Macrantha	.....
	Rubiginosa	.....	.....
	Tomentosa	.....	.....
	Villosa	Pomifera	...
Cinnamomeæ .	Cinnamomea	.....	.....
	Alpina	.....	.....
	Macrophylla	.....	.....
	Acicularis	.....	Americana
	[illegible]	Rugosa alba	Mme. Georges Bruant
		[illegible]	[illegible]
Carolinæ . .	Carolina	Lucida	.....
Spinosissimæ or Pimpinellifoliæ	Spinosissima	Altaica	.....
		Hibernica	.....
	Involuta	.....	.....
	Xanthina	.....	Scotch Roses
	Ecæ	.....	Stanwell Perpetual
Luteæ . . .	Sulphurea	.....	.....
	Lutea Bicolor	.....	.....
	Lutea	.....	Harrisonii, Persian Yellow — Hybrid Lutea
Sericæ . . .	Serica	.....	.....
Minutifoliæ .	Minutifolia	.....	.....
Bracteatæ . .	Bracteata (Macartney)	.....	Marie Leonidas
[illegible]	Lævigata	Sinica	Sinica Anemone
Microphyllæ .	Microphylla	.....	.....
Simplicifoliæ .	Berberifolia	.....	.....

CHAPTER III

BRITISH WILD ROSES

R. spinosissima. R. pomifera. R. involuta. R. rubiginosa. R. hibernica. R. canina. R. arvensis.

CAN anything be more beautiful than the highways and byways of Great Britain when Flora at midsummer bedecks them with wreaths, clusters, and cascades of wild roses? Beautiful at least to those who can appreciate this gift of nature; for there are some who fail to do so, and infinitely prefer a few standard closely cropped mop-heads of roses struggling for existence in the front garden. Strange that it should be so. And all because the one is wild and the other is cultivated!

In nature's garden we have so much variety: pillars, bushes, climbers, and trailers. Look at *R. canina* as you pass down the narrow country lane bordered right and left with high hedges. See how it thrusts out its long shoots well above the surrounding undergrowth, or clinging for support to some tree trunk, its graceful branches laden with pale blush or pink blossoms. Or as you wander along some meadow hedgerow, there before you is *R. arvensis*, a dense, impregnable bush, breaking the even line of the hedge as it encroaches upon the grass; safe hiding-place for the rabbit. Year by year the long, slender, trailing shoots of purple wood and bright

ROSA SPINOSISSIMA
(*natural size*).
THE PARENT OF THE SCOTCH BRIERS.
From H. C. Andrews' Monograph.

green leaves advance into the open, and from top to bottom the pure white sweetly scented flowers descend in cascades of loveliness. Or are you taking a seaside holiday? Then wander along the coast, and in certain localities, wind-swept and sandy, you will doubtless find the compact, stiff, dwarf-growing *R. spinosissima*. Go into the country where you will at midsummer, Flora will present you with a rose for your buttonhole. But you must make the most of your time. In the years that are coming roses by the wayside will be but recollections, like Sedan-chairs, stage-coaches, and turnpikes. The paid highway surveyor of the Rural District Council has come upon the scene: he wages war against high hedges. Notwithstanding the increased cost of repairs under the new system, the roads are bad. Worthless metal, lazy road-menders, lack of supervision, all contribute to this result, and the high hedges have to bear the blame. Down they come; away go pillars, streamers, and bushes of roses, and nothing is left but a row of hedge stumps, crowning the top of a mud-beplastered bank. Miles of trim hedges are taking the place of Flora's roadside rosary. Oh, the pity of it all!

For the present nature strives to break up this monotonous trimness, and some byways, hedgerows, and manor wastes still remain where we may revel in a wealth of wild roses. And how the country children love them!—the nosegays of wild roses they gather on their way to school, a gift to some popular teacher. It is a good sign when this prevails; it testifies to the existence of a good feeling between teacher and scholar, and shows a certain power of observation and appreciation

of the beautiful—a power which greatly needs development. It is the writer's pleasant duty to pay an annual visit of inspection for diocesan report to many elementary schools, and in the majority of cases the rural schoolrooms are decorated on the day of inspection with wild flowers, the rose being the favourite. I speak of Essex children. The love of roses, wild or garden, is great in Essex children.

But some one perhaps will say: "These are only wild roses, we want to read of something better than mere dog-roses; we want some hints on the growing of roses in the garden, and for exhibition." Indeed! but you must walk before you can run, and if you would be an efficient rosarian you should walk in the Flora's natural rose garden. May one ask whether you have learnt to distinguish in habit, growth, and flower between *R. canina* and *R. arvensis*, the commonest of British species? If you have not, then I fear you have something to learn from the hedgerows before we enter your garden. You perhaps lump these and all other British species together as dog-roses, just because they have single flowers, being unaware that in Great Britain and Ireland there are at least seven species, and many more sub-species; Sowerby gives sixteen! Take three of these, *R. canina*, *R. rubiginosa*, and *R. arvensis:* study them carefully, and unless you have eyes and see not, they will teach you much as to the effect of soil and situation, the habit, flowering growth, fruit, the difference between a bloom of yesterday and to-day, and many things besides. Bear with the writer if, for a short time, he invites you to consider some of the wild roses of Great Britain and Ireland.

Rosa Spinosissima

(*R. pimpinellifolia*: The Burnet or Single Scotch Rose)

This species obtains its name from the peculiarity and abundance of its prickles. It is the most spiny of all roses, as any one who handles it will speedily discover. In character it is a small bushy shrub, branches erect, 1 to 4 feet high, crowded with sharp straight-pointed prickles together with many smaller ones passing into stiff bristles and glandular hairs, both wood and prickles being brown in colour. The leaves are small and destitute of glands. The flowers are white, sometimes pink, cup-shaped, small, about 1 inch to 1½ inches in diameter, very fleeting when fully developed. It should be gathered in the bud stage if required for decoration. The transient nature of the open blossom is, however, neutralised by the abundance of the flowers. This species is one of the earliest of roses: coming into bloom in May. The fruit is round, turning from purple to a dead black as it ripens. *R. spinosissima* prefers open sandy situations near the sea: it is fairly distributed, being found, amongst other places, in Cornwall (the writer received his first plant from the neighbourhood of Penzance), the Channel Islands, Ireland, and Scotland, in which last-mentioned place it flourishes at an altitude of 1700 feet. It is therefore at home in diverse climates. The best way to obtain satisfactory plants of this rose is from seed, which speedily germinate. It is recommended that the seed should be sown in the place where it is desired to have the rose. Being of dwarf habit it is suitable for a border

to a shrubbery. Sow the seed in a row, and in a year or two you will have a compact bushy little hedge averaging from 18 to 24 inches high and 12 inches thick. *R. spinosissima* is distinct, easy to propagate, hardy, and comes into flower so early that room should be made for it in every rose garden.

Rosa Villosa (*R. pomifera*)

The majority of botanists describe this British species under the name of *R. villosa*, but to present-day rosarians it is more generally known as *R. pomifera*. It is of robust habit, sending up erect and arching root-shoots or branches to the height of 9 or 10 feet in a single season, soon forming a large bush, and therefore needing plenty of space in which to grow. Lindley, in his *Rosarum Monographia*, states that it is "the largest of the genus, sometimes forming a small tree, with a trunk as thick as a man's arm." The wood when young is of a very light green, turning brown later. Its prickles are few, white, and straight pointed. The leaves are most noticeable, being of a dull pale green with a remarkable bluish tint; leaflets very hairy but smooth on the under side. The flowers spring direct from the branchlets, and are produced in pairs, pale pink, and small for the size of the wood and leaves, 1½ inches in diameter. For a species it is comparatively late in blooming, opening about the first or second week in July. It is worth growing, if only as a distinct variety, although not very attractive nor free flowering, and is better adapted for a shrubbery or border than for growing amongst other roses. It has, however, a beauty of its own, a beauty in the large

fruit which is orange red when young changing to dark red as it ripens. It is in the fruit quite distinct from any other species, British or foreign, for the fruit is covered with hairs, and when ripe—it ripens early—closely resembles a dark red gooseberry of the very finest size. The weight of this handsome fruit, which is out of all proportion to the size of the flower, causes the branches to bend down, thus affording light and air to the young growth. No pruning is required, except an occasional thinning out of the old wood to keep the plant within bounds. It is easily propagated from seed, and, although the writer has not tested it, it seems, from the smoothness of the wood and its upright growth, to be a likely stock on which to bud hybrids. This species must not be confounded with another variety sometimes exhibited at rose shows under the name of *R. pomifera*, for the flowers of this are larger and of a deeper colour. Possibly it may be a hybrid of the original species.

R. villosa is stated by Sir Joseph Hooker to be found in hedges and thickets in the north as far as Shetland and also in Ireland, ascending in Yorkshire to an altitude of 1500 feet. This variety is the parent of two subspecies, *R. mollis* and *R. tomentosa*.

Rosa Involuta

On the authority of Sir Joseph Hooker *R. involuta* forms one of the seven British species, and therefore claims a brief notice here. It appears that its name is derived from the form of the petals, which are involute. Discovered by Dr. Walker on the Scottish Highlands; also found on banks and in hedges of the Orkneys, and in Ire-

land. In growth it makes a compact reddish-grey bush between 2 and 3 feet high. The branches are erect, somewhat single, and very strong, having a cracked bark densely covered with prickles. The leaves are glandular or hairy on both sides, and when bruised emit a turpentine smell. The flowers, produced singly, are variable in colour, both red and white. The tube of the calyx and the sepals bristle all over with *setæ* and clammy glands. The fruit, produced sparingly, is red, and stands erect. *R. involuta* forms a link between *villosa* and *spinosissima*.

ROSA RUBIGINOSA (*R. eglanteria*, Linnæus: Sweet-brier)

We now come to the most popular of all the British species, well known to all lovers of the rose by the delicious fragrance emitted from the bruised glands of the leaves. No garden of any size should be without its brier bush, the eglantine of poets, the "Sweet Maria" of Essex children, referred to in Chapter I. How sweet it is when, in the early spring, the young leaves appear; how beautiful at the latter end of June with its deep rosy flowers; and in the autumn, long after the leaves are gone, still attractive with its masses of deep orange-red fruit. No wonder it is popular.

As a first lesson in the botany of the rose, or as an exercise in rose observation, it is well worth pains to compare *rubiginosa* with *canina*. Note first the habit. Whilst the dog-rose sends up long, arching branches, some 6 to 9 feet high and perhaps more, the sweet-brier is content with branches 3 or 4 feet in length. And, whereas in the dog-rose the branch continues single, the sweet-brier sends out side growths or branchlets, quickly

forming a dense bush. Note also the prickles. To a certain extent they are stout and hooked like those of the dog-rose, but more irregularly placed. On the young root-shoots, however, there is a marked distinction, for whilst on the sweet-brier this young growth is covered with *setæ*, some of them very small, tipped with glands, in the dog-rose they are totally absent. And then compare the shape and colour of the fruit. In the species before us the fruit is rounder and more deeply coloured than in the *canina*, and the birds appear to detect a difference in the flavour of these two fruits, for they invariably attack first that of the dog-rose before commencing on the sweet-brier. Long after the former has been denuded of all its fruit, that of the latter remains practically untouched. Only when very hard pressed will birds eat the sweet-brier.

Unlike the *canina*, the *rubiginosa* prefers a light soil. In its wild state it is found on the chalk hills of England and as far north as Yorkshire. Having been cultivated in gardens for centuries the birds have scattered the seeds broadcast, so that it is difficult to know, even when found growing wild, whether it is really indigenous. Grown in English gardens in company with other roses, and being a species easily fertilised, it is not surprising to find many so-called but nevertheless doubtful sub-species or varieties such as *micrantha* and *agrestis*. As an instance of chance hybridisation we may refer to a charming variety found by the late Rev. H. H. D'Ombrain growing in a garden at Darlington, which was afterwards sent out by Messrs. Paul & Son in 1892 under the name of Janet's Pride. Mr. Thomas Rivers, in his "Rose Amateur's Guide,"

published some forty years ago, suggested the possibility of a new race of roses by cross-fertilisation with *rubiginosa*; a suggestion carried into effect by the late Lord Penzance in the early 'nineties, in his remarkable and popular series of pedigree hybrid sweet-briers.

The best mode of propagating *rubiginosa* is from seed. In the autumn sow a patch of ground with sweet-brier; some will come up the following spring, other seed will perhaps lie dormant until the second year. The young seedlings may then be removed from the patch, and planted in a double row to form a hedge. Considering the bushiness of its habit one wonders that sweet-brier hedges are not more common.

Rosa Hibernica

Can this rose really be considered a distinct species? It is classified as such both by Lindley and Hooker, no mean authorities, and possibly their opinion is correct. But is there no reason why it may not be the result of the cross-fertilisation between *spinosissima* and *canina*, and therefore not a species but a hybrid? It is recorded that when weak in habit *R. hibernica* resembles the former, when more vigorous the latter. Like *spinosissima* it forms a compact shrub, growing 3 or 4 feet high, with erect reddish-brown branches covered with straight prickles passing into bristles, having similar leaves, but larger. Like *canina* some of the prickles are hooked; it has no *setæ* or glands, the fruit is quite smooth but crowned with sepals, and is of a deep dull red. The flowers, pale pink, are produced singly and without bracts. From this brief description it will be

recognised that, whether species or hybrid, *R. hibernica* shares in the characteristics of both *spinosissima* and *canina*, forming a link between the two.

The account of its first discovery is interesting. Patrons of botany in Dublin offered a prize of £50 for a new Irish plant. Mr. Templeton found *R. hibernica* growing in the neighbourhood of Belfast, and for this rose he was awarded the prize. Since then this rose has been found from Sunderland southwards, and in France, but is rare on the Continent.

Rosa Canina (Dog-rose)

Here we have a species with which all are familiar —the most common and the most beautiful of all the British roses, the delight of rural childhood, the admiration of all rose lovers, adding grace and loveliness in the month of June to the highways and byways of Great Britain and Ireland. The strongest of growers, it sends up branches straight from the root to the height of 7 to 9 feet. The wood bright green, except where it is bronzed by the sun, armed with strong scattered prickles broad at the base and hooked, rarely straight, and absolutely destitute of *setæ*. The stoutest prickles, shaped like a dog's tooth; leaves smooth except for the presence of a few little hooked prickles on the back of the leaf-stalk; flowers of a deep pink when young, becoming paler as they expand, and the golden stamens turn black. As the petals drop the long shoots arch over, borne down by the weight of the oblong scarlet fruit, which in many cases is hardly ripe before it is devoured by birds.

Carried away by the fowls of the air, the seed is dropped in every possible kind of soil and situation, and the result is variation. Climate and soil play a prominent part in the variation of all roses, but in none more than *R. canina*. To the observant this reveals much. Note that bush growing behind the tarred weather-boarded shed. See how deep coloured are its flowers. But what is on the other side of the shed? The farmyard. Through a hole in the brick foundation the liquid manure trickles into the ditch; the rose has found it out, and revels in the juice. Does not that tell us, if we did not know it already, that the rose is a gross feeder, and profits in flower and foliage by that on which it feeds? Pass down a lane shaded with trees or through a wood; here we meet with another bush of *canina*. Its wood now is thin and pale, so are the leaves, and the flowers are almost white; we can hardly believe that it is the same species. Nevertheless this variation is really the result of soil and situation. But variation is a characteristic of *R. canina* apart from soil and climate, for in the same hedgerow one plant will produce deep pink flowers and another pale blush or white. And more remarkable still, this variation is carried out on the same plant; for a keen observer will sometimes detect there not only differences in colour, but some leaves entirely smooth, and others in which the midrib and principal vein are both clothed with pubescence or small hairs.

No wonder, then, that some botanists, not being at the same time practical rosarians, ever spending their time in searching for or hearing of some new thing,

have found, or thought to have found, sub-species of *R. canina* too numerous to mention in these pages —no less than twenty-nine being given by one authority!

This rose is easily raised from seed. Of its value as a stock, either as a seedling or rooted cutting, or as an object lesson in the art of pruning, we must defer our observations for another chapter.

Rosa Arvensis

Next to *canina*, *R. arvensis* is the most abundant of all the British species; in Essex particularly so. Coming into bloom about a week or ten days later than the dog-rose, it continues in flower some time after the petals of the last dog-rose have fallen. I have seen it in bloom in September, but this is abnormal. It is most free in flowering, and quite distinct both in bloom, habit, and foliage. The branches are long and slender, trailing over last year's growth or anything else handy. The wood is a dull purple, with scattered prickles, sometimes hooked, but generally straight. These on the old wood are white, but on the young growth are red and smaller. The leaves are glabrous and shiny above, rarely downy something like the foliage of the tea-scented class. At midsummer *R. arvensis* needs no seeking, it forces itself into notice, being then one mass of flowers pure white with a yellowish base, golden stamens, and having a sweet scent peculiar to itself. The disc is elevated and fleshy, the calyx purple, like the wood.

One would think from the length of the branches that it was a climber, but on closer observation we find

that this is not the case. Springing from the centre, the shoots trail downwards, the effect being a cascade of roses.

R. arvensis is the parent of the weeping Ayrshire roses, such as Dundee Rambler and Bennett's Seedling. Being extremely hardy—the flowers are proof against a severe May frost, even when those of *canina* succumb —it will flourish almost anywhere, speedily covering a considerable space owing to the rapidity of growth, especially if in a position to throw the shoots over some undergrowth and get them baked by the sun. No wild garden is complete without this species, and after planting leave it alone, do not attempt to prune it.

R. arvensis has one sub-species, *R. stylosa*, stated to be the connecting link with *canina*, together with several varieties, but these are more interesting to the botanical student than to the average rosarian.

Of the seven species recorded in this chapter, the three which will be most generally observed, since most widely distributed, are *canina*, *arvensis*, and *spinosissima*. *Rubiginosa*, now a cultivated species, is found in every garden. *Villosa*, *involuta*, and *hibernica* are more or less local, requiring search. It now remains for the reader to exercise his powers of observation, and to see in the roses of the British Isles more variety in growth, foliage, flower, and fruit than possibly he was hitherto aware.

Possessing this knowledge and awakened interest, he, as he cycles through English country lanes, trudges

ROSA ARVENSIS
(*natural size*).
THE PARENT OF THE AYRSHIRES.
From Sowerby's Botany.

over Scottish highlands, tours through Ireland and the Lake district, wanders to the Land's End, or strolls by the sea-shore, will have eyes to see the beauty, variety, and adaptability of the roses of Great Britain and Ireland.

CHAPTER IV

WILD ROSES OF OTHER COUNTRIES

R. alpina	R. rubrifolia	R. ecæ
R. bracteata	R. setigera	R. lutea
R. moschata	R. rugosa	R. wichuraiana
R. moschata grandiflora	R. brunonii	R. altaica
R. multiflora	R. macrophylla	R. banksia

WILD roses had a place in gardens and shrubberies in the days of our grandfathers, but in more recent times the selection of shrubs was much restricted. Generally speaking, the choice was confined to laurel, laurestinus, Portugal laurel, and one or two varieties of rhododendron. The cultivation of rose species as bushes and shrubs was a thing of the past, owing, in no small degree, to the advent of the autumnal-flowering roses such as the hybrid perpetual and tea-scented, for these gave a succession of flowers as long as the warm weather lasted, while the species had only one crop of flowers. The taste, or lack of taste, of the early Victorian era may also account for the decline of the wild roses; and so together with the artistic decoration of our houses, the beauty and grace of the single roses in our gardens were things of the past. It was an age of stiff, stout, mahogany, wax flowers, antimacassars, bedding-out, and standard rose trees. Gone were such species as *alpina*, *rubrifolia*, *multiflora simplex*, *lucida*, and others that were grown in the early years of the nineteenth century; they were almost unknown, and

never seen except in very old gardens. Fashions happily have changed, and once again these and others like them are planted in suitable situations, where, left to themselves, and with no ruthless knife to spoil their beauty, they are forming large bushes delighting the eye with masses and streamers of glorious flowers once every year. Notwithstanding that they bloom only once in the season, if selected with reference to the date of flowering—some early, some late—it is quite possible to have wild roses in flower from the end of April to the middle of August, beginning with *alpina* and *altaica*, and ending with *setigera*. Nowadays no rose garden can be deemed complete unless it contains a few of these wild roses. This is an age of collecting, and whilst we collect stamps, post-cards, old pewter, and other things equally absorbing, the rosarian might do well to collect and cultivate as many rose species as possible; it would certainly be as interesting.

It is not proposed in this chapter to give an exhaustive list of rose species. Those wishing for fuller information on this point should study Lindley's *Rosarum Monographia* (1820), and other works of a similar character. Nor should it for one moment be inferred that those here mentioned are the only ones worth growing for their beauty; the writer simply offers a few remarks on species which have either been cultivated by him or come under his personal observation.

Before dealing with these roses *seriatim*, let it be borne in mind that species, as a rule, are best left in a state of nature; no pruning is really required to encourage bloom, they flourish best when left alone. Thin out the

old growth, not annually, but only from time to time when needful to keep them within bounds, and to admit light and air to young wood. Nor do I advocate that they should be trained over arches or pergolas, for they look much better and appear far happier if allowed to develop according to nature. And it should also be remembered that, since these rose species are not perpetual—that is they do not have more than one crop of flowers in the year—it is not advisable to plant them in a conspicuous part of the garden; and further, that inasmuch as they occupy a considerable space of ground, they should be regarded as flowering shrubs like rhododendrons, and in some instances even more beautiful, by reason of the rich colour of the fruit succeeding the flower. Again, as these species for the most part, take a year or two to become established, it stands to reason that they resent frequent transplanting, and therefore should be planted with regard to permanency. You may often, with advantage, lift and replant hybrids, but not species. Care should be taken in the preparation of the soil; it should be deeply trenched—for the roots will run far—and well manured, not only with farmyard manure, but, if the soil requires it, with a dressing of half-inch bones or any substitute equally lasting, applied below the earth on which the roots are placed. One cannot by surface dressing make up for any deficiency in the preparation of the soil previous to planting. A rose species, when once it is established, will forage for itself. Give it plenty of plant food when planting, and it will require no more for years to come.

With these few general remarks let us now proceed

to the consideration in detail of some of the best wild roses.

Rosa Alpina

Section: *Cinnamomeæ*. Linnæus, 1762. Europe.

Rosa alpina, as the name indicates, a native of the Alps and other mountainous districts of Europe, abounding in varied situations even to an altitude of 6000 feet, was evidently popular in English gardens a hundred years ago. We frequently meet with it in the shrubberies and remote borders of old gardens, to which places it may have been relegated in favour of the hybrid perpetual or owing to its habit of sending up root-shoots or suckers at some distance from the main stem; the plants remaining may have come from a sucker left behind when the old bush was dug up and thrown away. It has now returned to favour, and rightly so, for it is an elegant, bright little rose and one of the earliest to bloom.

R. alpina is a bush growing between 6 to 8 feet high. Branches nearly erect, of a greenish-brown colour, covered with a bloom something like that on a grape. The wood is quite smooth—a rose without a thorn; the branchlets are produced sparingly, so that it seldom makes a thick bush, and for that reason does not require much thinning. The leaves are soft and wither quickly when gathered if left long out of water. Leaflets, nine in number, of a pale green. Flowers, about 2 inches in diameter, deep crimson-red with a ring of golden stamens, erect, solitary, short foot-stalk by reason of which the upper leaves extend beyond the flowers and

the bloom is partially hidden by the foliage. The fruit, which ripens early, is orange-red, ovate and pendulous, with a long neck, something like a sausage. Both leaves and flowers have a very distinct perfume, like turpentine. From this perfume and the peculiar shape of the fruit, *R. alpina* is easily recognised.

This wild rose of the Alps is very hardy, will grow anywhere, and will hold its own when planted with other shrubs. Persistently throwing up suckers which can readily be detached with roots, additional plants can soon be had without resort to budding. It grows readily from seed, and has supplied us with several double varieties, notably the class of hybrids known as Boursalt roses.

Rosa Bracteata. 1795

Section: *Bracteatæ*. Native of China, Formosa, Northern India.

The Macartney Rose.—This species is said to have been first brought to England by Lord Macartney, in 1765, and is thus commonly known as the Macartney Rose.

R. bracteata, like all the roses of this section, is distinguished by the thick woolliness of its fruit and the large size of the bracts, which are covered with minute hairs and finely pectinated edges. Branches erect, stout, and short jointed, bearing strong parrot-beaked prickles, placed in pairs just below the spring of each leaf-stalk. Leaves very handsome, dark shiny green; leaflets, five to nine. Flowers solitary, large, and attractive, pure white, having a peculiar fruity perfume and an immense

number of golden stamens. Indeed, the reproductive organs of this wild rose are in a high state of development, for the stamens number between 350 to 400, and the ovaries from 140 to 170. The fruit is orange red, round and densely covered with pubescence, which give the fruit a woolly appearance.

R. bracteata is fairly hardy, but requires for perfect development a south wall up which to be trained. There it will flourish, running up 10 or 12 feet. After it is well established—which takes a year or two—it will quickly cover the wall of a house. I remember a plant, many years old, that grew up a house at Havering, facing south, to the height of probably 12 or 14 feet. This plant produced handsome flowers continuously during August and September.

To grow the Macartney successfully—and it is well worth doing so—select a warm, dry aspect, with plenty of sunshine, a niche in the wall of house or corner of a buttress, sheltered from the north-east, and a light enriched soil. Protect the plant for a year or so, until it begins to make long growth; nail up the shoots to the wall and possess your soul in patience. Do not attempt to prune it, and when established, you will be well repaid with a rose most beautiful, both in foliage and flower.

Rosa Lucida. 1789

Section: *Carolinæ*. Native of North America.

Rosa lucida, like *alpina* is a wild rose met with in many old gardens, and growing under similar conditions. It forms a compact bush about 5 feet high; branches

erect, reddish-brown; prickles few; leaves abundant, spreading irregularly, lanceolate and shiny; leaflets nine. The flowers are bright red, somewhat larger than *canina*, produced several together. Having very short footstalks the flowers are quite overtopped by the leaves. In gathering *lucida* for house decoration it is necessary to strip off a great many of the upper leaves or the blooms will be hidden. The fruit is small, round, and red, standing erect, a pleasing contrast to the dense bright green foliage, which in autumn is very beautiful, tinted red.

It is not so free flowering as some species, but nevertheless continues in bloom well through August and even September.

From the bushiness of its habit, density and beauty of its foliage and bright flowers, *lucida* is very suitable for planting with other shrubs. Moreover it will grow in the driest and poorest of soils. Throwing up suckers 3 or 4 feet from the centre it soon covers the surrounding space.

Rosa Moschata. 1762 (The Musk Rose)

Section: *Synstylæ*.

Native of Asia, Northern Africa, Persia, and Madeira.

Rosa moschata is one of the best species for general cultivation. Hardy and very free flowering, it blooms best where it can have plenty of sunshine, and is more adapted for the pillar than for the shrubbery.

Growth erect, about 6 feet long, much branched; wood green turning to red bronze; foliage soft, light green, both wood and leaves being covered with pubescence.

ROSA MOSCHATA
(natural size).
ONE OF THE PARENTS OF THE NOISETTES.
From H. C. Andrews' Monograph.

The flowers, borne on bronze green lengthy foot-stalks, are produced in large trusses, each bloom 2 inches or more across, very handsome, white slightly tinted with pink. When the flower is young the stamens are bright yellow, turning black later. A spray of *moschata* is most beautiful, for on each stem or truss will be found ten or a dozen blooms in various stages of development, from the small green bud to the fully expanded flower, the soft deep pink of the opening bud in pleasing contrast to the white of the perfect bloom.

R. moschata takes its name from the perfume of the flower, a musk-like scent noticeable in a moist atmosphere. It is said to be the species from which attar of roses is obtained. It is the parent of several hybrids of the musk rose class, once popular, but now seldom met with.

The original Noisette is supposed to be the result of accidental cross-fertilisation between *R. indica* and *moschata*. Closely allied to the species before us, and of which they may possibly be sub-species, are *moschata nivea* and *moschata himalayica*.

Rosa Moschata Grandiflora. 1886

Section: *Synstylæ*. Native of China.

Polyantha grandiflora.

Here we have a rose introduced by M. Bernaix in 1886. It is sometimes classed as a *multiflora*; but if we examine the foliage, especially the stipules, we soon see that it is not of the same class as *multiflora simplex* and its hybrids, such as Crimson Rambler. M. Crepin

and others class it under *moschata;* at any rate it is not a *multiflora.*

Grandiflora is unrivalled among the wild roses of the world for outdoor cultivation; of tremendous growth, handsome foliage almost evergreen, and pure white flowers 3 inches across, and musk perfume. Branches at first erect, then arching, and finally weeping; wood green, bronzing on the side exposed to the sun. These when permitted to grow naturally lie on the top of the old flowering wood, or any other shrub that is available, in order to become baked by sun and air. If artificially kept upright and not allowed to fall over, the ripening process is retarded, and the wood is then liable to be cut by the frost. If the few prickles which this species carries jump off by a slight pressure of the finger, we know that the wood is ripe, and a fine crop of flowers is in store. If planted on the north side of a hedge or boarded fence it will throw its long shoots over the top, and arch down the other side; if planted with other shrubs it will soon dominate them all. Never mind if it seems to smother them, it is nature's method; to prune it into shape is to court failure.

The leaves, dark shining green, are particularly handsome, remaining on the branch until the flowering eyes start into growth the next spring. From these eyes, at the bend of the now weeping branches, come the flowering shoots, thick and sturdy, growing out in some instances 3 or 4 feet long, breaking into further shoots at the top, each smaller growth, devoid of foliage, bearing masses of flowering buds, hundreds coming from one such stem and in various stages of development, so that for a

period of a month or six weeks shoot after shoot contributes a continuous supply of beautiful pure white single blooms with bright golden stamens. The fruit is small, round, and not highly coloured, a dull yellow-green inclining to black.

In planting select a sunny aspect in the open, with a cool subsoil. Do not shorten the long growth, but in August, as soon as the flowers are over, cut out close to the main stem all the old wood that shades from the sun the young wood, now growing erect. It is essential that the young growth should have as much sunlight as possible, leaving just sufficient of the old wood as will form a basis on which, when fully grown, the new growth may fall over, rest, and bask. Budded on the Manetti stock *grandiflora* will quickly develop into a grand bush. No rose garden should be without it, for it is one of the best of all the species for outdoor cultivation.

Rosa Multiflora. 1781

Section: *Synstylæ*.

Native of China, Japan, Corea, Isles of Formosa, and Luzon.

Polyantha rimplex (the Blackberry Rose).

A remarkable rose, so remarkable that when seen staged in bunches at the rose exhibitions people unacquainted with it often fail at first sight to recognise it as a rose, the flowers being more like blackberry blossoms than roses. The flowers are single, the size of a sixpence; white, with golden stamens, when first expanded. These stamens soon turn black, and then the whole flower seems to lose brightness. It is there-

fore most essential when gathering this species to see that there are plenty of buds on the truss.

R. multiflora is a rampant climber throwing out shoots 12 to 15 feet in length, bending gracefully as they ripen. The wood is smooth, with the exception of a few strong-hooked prickles placed in pairs under the stipules. The leaves, distinct from other species, are dull velvety green, hairy on both sides; leaflets five to seven. Springing directly from the long branches are the laterals, or flowering shoots, which break into a multitude of little branchlets when about 2 feet from the main shoot, each bearing clusters of little flowers. One such flowering shoot will bear a hundred or more blooms, and on it at one time will be found flowers in all stages of development, from the light green bud to the falling blossom, one or two such stems in themselves forming a nosegay.

This species is the parent of several summer-flowering hybrids, such as Turner's Crimson Rambler and Claire Jacquier; and the class of perpetual-flowering dwarf miniature roses, known as polyantha, such as Étoile d'Or, La Paquerette, and the like, is the result of crossing *multiflora* with *indica*.

R. multiflora is quite hardy, and will grow anywhere. It is seen at its best when left to grow naturally, not tied into shape nor pruned. The Manetti stock suits it, and the best method of propagating it is by budding. In itself it has certain qualities which make it useful as a stock on which to bud other roses.

ROSA MULTIFLORA
(natural size).
THE PARENT OF THE RAMBLERS.
From 'Garden and Forest.'

Rosa Rubrifolia. 1803

Section: *Synstylæ.*

Native of the Alps of Savoy, Pyrenees, Switzerland, and Austria.

R. rubrifolia is a very distinct species of the *synstyla* section, especially on account of the wood and foliage. The wood, for the most part smooth, is reddish-purple, covered with bloom resembling an unripe grape, the leaves being of the same colour, with the midrib and base of the leaf crimson. The flowers produced singly are pretty, but too small and not sufficiently abundant to be effective. They are pale pink in the centre, shading into dark red at the edge of the petals. The fruit is scarlet.

Growing like *setigera, rubrifolia* forms a bush 5 feet high. There is in this species an entire absence of green, and when planted, as it should be, with other roses or shrubs makes a very effective contrast. The foliage, for the same reason, is most useful for all kinds of decorative purposes. It is hardy, and will grow in almost any soil.

Rosa Setigera. 1803

Section: *Synstylæ.* Native of North America.

Prairie Rose (the Bramble-leaved Rose).

R. setigera should be found a place in a small collection of species, chiefly on account of the date on which it comes into flower. Blooming in August it is therefore one of the very latest of the species.

Branches long, erect, smooth, armed beneath the leaf-stalk with one to three hooked prickles. The form of the leaf is uncommon, for whereas the ordinary form has at least five leaflets, *setigera*, in common with another family of *rosacæ* (the blackberry), has only three. Hence its name of the Bramble-leaf Rose. The shape of the leaflets is also very distinct, being long, much pointed, and acutely serrated. The flowers, produced in clusters, are about 1½ inches in diameter, soft, deep pink, with golden stamens. The long foot-stalk and calyx are covered with *setæ*, and the fruit is red and globular.

Of vigorous habit, *setigera*, when well established, forms a large bush suitable for shrubberies.

Rosa Rugosa. 1784

Section: *Cinnamomeæ*. Native of Asia, Mount Caucasus.

Ramanas Rose of Japan (Hedgehog Rose).

Although discovered and introduced more than one hundred years ago, *R. rugosa* does not appear to have come into popular favour until the last twenty years, and even now one meets with lovers and growers of the rose to whom it is absolutely unknown. Yet what rose is there more handsome in habit, foliage, flowers, and fruit—and it is perpetual.

A shrub 4 to 5 feet high, thick and bushy; branches erect, densely covered with sharp, straight-pointed prickles and *setæ*; leaves dark green, thick and strong, leaflets five to nine; flowers very handsome, 5 inches across, pure white, long-pointed bud. This variety

is commonly known as *rugosa alba* to distinguish it from another, *rugosa rubra*, bearing flowers of a deep rose, and more abundant. The most striking feature of both species is the fruit, which for a rose is of immense size, as large as the wild crab apple, spherical, smooth, and brilliant red, bearing a most striking contrast to the beautiful dark green foliage.

To grow *rugosa* at its best select an open spot where the soil is light—it is not at home on clay. From its density of growth and thorny wood it is eminently suitable as a hedge. Birds are very fond of the fruit, especially pheasants, and for this latter reason it has been adopted for covert planting.

R. rugosa has during the last few years become the parent of a distinct class of hybrids, the varieties already obtained being the first of what will probably become an important race, especially if it can be made perpetual flowering. The semi-double white, Madame Georges Bruant (1887), is good, but the flowers when gathered are fleeting and the petals are easily bruised. Blanche Double de Coubert (1892), pure white, is likewise good, and perhaps better. Conrad F. Meyer (1900), double flowers, light rose, is handsome and is one of the earliest to flower. But most charming of all is Fimbriata (1891), producing small blush-white flowers, petals fringed at the edges like a picotee, as the name indicates. It is a most distinct break, and one hopes to see more varieties of this beautiful rose. Like the species it is very vigorous, forming a fine bush, and although hardly a perpetual is in bloom for a long period.

Rosa Brunonii

Section: *Synstylæ*. Native of Asia.

R. brunonii is said to have been named after Robert Brown, a celebrated botanist, in recognition of his researches in Australia. Branches erect, growth strong, 8 or 9 feet high; wood pale green, smooth, free from pubescence; leaves, like the wood, are of a peculiar pale green tint; prickles parrot-beaked, strong, scattered. The particular beauty of this species lies in its flowers, which are pure white, produced in clusters. It is very free flowering, coming into bloom later than most species. It is quite distinct, and should be found in every garden.

Care should, however, be taken to ripen the young summer growth by thinning out the old flowering wood as soon as the blooming is over, otherwise it is liable to be injured by frost. It should therefore be planted where it can obtain as much sun as possible. Grow it as a pillar out in the open, not in a shady spot.

Rosa Macrophylla. 1820

Section: *Cinnamomeæ*. Native of Asia.

This is a distinct species, of long-branching habit, not bushy; in general appearance resembling *alpina*, but stronger in growth and much larger in the blossom.

Branches erect, unarmed, reddish-brown, 8 or 9 feet high; leaves remarkably long and slender, deep green lined with purple; leaflets eleven; flowers pale red, 4 inches in diameter, produced singly; fruit most peculiar in shape, oblong, more so than *alpina*, pendulous orange-red.

R. macrophylla is worthy of a place in the rose garden. Planted with rhododendrons, it speedily towers above them, and being elegant, not bushy in habit, it does not absorb much space. The shoots, preserving their erectness even in the flowering season, do not fall over and upon the undergrowth. It rejoices in the sunshine, and thrives best in a dry soil.

Somewhat impatient of transplanting, it is as well to plant it when young, otherwise it will sulk for some little time. It is so closely allied with *alpina* that seedlings of *macrophylla* will sometimes show a great likeness to *alpina*. It seems a promising parent for a distinct class of hybrids, and a pure white, with *macrophylla* form and habit, would indeed be an acquisition.

Rosa Ecæ (The Yellow Abyssinian Rose)

Section : *Spinosissimæ*. Native of North Africa.

The charm of *R. ecæ* lies in the colour of the flowers, which are of a deep orange-yellow, like a buttercup, but of a slightly larger size, produced, as in the case of the briers, from the laterals of the branchlets, the stamens being of the same colour. Blooming early in May, the branchlets, as they bend over, a mass of flowers giving forth a sweet perfume, have a most beautiful effect.

Branches erect, 3 feet long; reddish-brown wood, very spiny, densely covered with prickles and *setæ*, base of prickles elongated and bright red: leaves small, with leaflets seven to nine in number, after the character of *spinosissima*, the dark green foliage of the miniature leaves affording a charming setting to the deep golden flowers.

To flower it is a work of time and patience, for if the plant is young, one has to wait some years before it blooms. The writer had to wait ten years. It is impatient of wet, and needs a very hot and dry situation, near a south wall for choice. If the plant is small, a handlight should be used to protect it from rain until it is well established. But when once it has taken root and commenced to send up strong shoots, the handlight may be dispensed with, for success is insured. It is not frost or cold, but wet that has to be guarded against. Growing from 4 to 6 feet high, the young wood will in alternate years give a mass of flowers all up the shoot. It must not be pruned, but just left to itself.

Rosa Lutea. 1596

Section: *Luteæ*. Native of Western Asia, Italy, and Austria.

The Austrian Brier, Yellow. (Race des Rosiers Capucine, *Gravereaux*.) The Austrian Brier, Copper.

Grown in England in 1586 by John Gerard, *R. lutea*, may be regarded as one of the earliest of foreign wild roses grown in Great Britain.

Like the briers, this species sends out the flowering wood, not from the branches but from the branchlets. We must, therefore, be careful not to cut away last year's wood. It is distinguished by its small leaflets, rich brown wood and prickles, and solitary flowers on short stems. In habit it is vigorous when grown in a warm protected aspect and light soil. The writer has seen a plant of Austrian Copper on an old rectory house in Dorsetshire which covered the wall space from ground

to eaves, a space about 12 feet high and as wide. Apparently it had little in which to grow but hard gravel —it was in the backyard; and no care was taken in its cultivation, except that the old stem had many years before been nailed to the wall. When in bloom it was a sight ever to be remembered—one mass of coppery red single flowers with darker stamens.

The yellow single variety is equally attractive, and both are such universal favourites that little description is needed. Although at their best when grown on or near a wall, these varieties are quite hardy and can be successfully cultivated in the open. In addition to the brilliancy of the flowers, *R. lutea* has the merit of being one of the earliest to flower, following closely in succession to *alpina*.

To insure free flowering: when the plant is vigorous and sends up long branches early in the summer, it is well to bend them over, so as to induce them to break into growth at as many points as possible up and down the shoot; for it is from this second growth that the flowering shoots are produced. If left to itself this species has a tendency to break into second growth only at the top, thus leaving the base bare and leggy. This method should be adopted in the case of the double varieties of the species, Harrisonii and Persian Yellow, of which more hereafter.

To propagate *lutea*, it should be budded on the brier. Cuttings do not strike readily nor in the writer's experience does it produce fruit.

Rosa Wichuraiana. 1887

Section: *Synstylæ*. Native of China and Japan.

A species suitable for covering grass slopes and banks. The branches, never erect but trailing, divide into small branchlets, which creep along the ground, rooting as they trail. The leaves are small, dark green and glossy. The flowers coming into bloom about the middle of August are pure white, about 1 inch in diameter, with bright yellow stamens, and sweet-scented.

Of comparatively recent introduction, *R. wichuraiana* has become the parent of a distinct class of hybrids, all having the same trailing habit. For those whose garden space is limited and are unable to allow it to creep in a natural way, a good plan is to grow it as a standard, letting the shoots stream downwards, or as a dwarf, it might be trained up a stake, and then allowed to fall over. It is quite hardy, and very suitable for growing in rock gardens.

Rosa Altaica

Section: *Spinosissimæ*. Native of Central Asia.

This is another very early flowering species, and well worth growing. Of robust habit, quickly forming a large bush; the branches are erect, light brown, covered with prickles and *setæ* like *spinosissima*. Flowers lemon white, of medium size. Fruit round and black. It can easily be propagated from rooted suckers, which are produced abundantly, some of the suckers appearing at a distance of 5 or 6 feet from the main stem. These if left to themselves will speedily develop into separate bushes. Space is required to cultivate *altaica* to perfection.

Rosa Banksia. 1807 (The Banksian Rose)

Section: *Banksianæ*. Native of China.

The Banksian Rose, so named in honour of Lady Banks, the wife of Sir Joseph Banks, was brought to England by Mr. William Kerr in 1807; this is the double white variety. In 1827, the more popular double yellow was discovered by Dr. Abel growing on the walls of Nankin. It is only in recent years that the single white and single yellow have been introduced.

R. banksia is a most distinct species and easily recognised. Branches unarmed, smooth; wood dull green; leaflets flat, oblong lanceolate, quite smooth on both sides; flowers produced in corymbs bearing clusters of from three to five blooms each—petals of the double varieties recurved, but flat in the singles. The flower is small, unrose-like in appearance, resembling the double blossomed cherry. The so-called yellow is really straw-coloured inclining to buff; it comes into flower early in May.

The Banksian Yellow Rose is hardy, and will, when established, send up most rampant shoots. The difficulty lies in getting it to flower. By reason of the abnormally early date on which the flowering commences, the bloom bud is liable to be cut by late spring frosts. This renders it necessary that it should be grown in a protected situation. The best position is on a south wall of a house, the projecting eaves of which will afford the necessary shelter. Thus planted, it will in most years throw out a mass of nodding flowers. Grown in light, dry soil, it will soon cover the wall space, climbing almost to any

height from basement to roof. Being almost evergreen, it never looks unsightly. The double white is not so hardy, and is more or less shy in blooming. The singles in this climate will seldom flower in the open. Sir Thomas Hanbury presented the writer with a small plant of the single yellow, which in a pot under glass blooms freely. Additional plants were obtained from cuttings, some of these being planted out of doors, one on a sheltered wall, but although it is making good growth, yet up to the present has bloomed but sparingly. In the garden of La Mortala, on the Riviera, it flowers profusely.

The *banksia* is impatient of the knife—the more it is pruned the more it will produce wood at the expense of flowers. But where cutting is necessary to keep it within bounds, prune only the young gross growth. Never, if possible, cut out the small twiggy wood, for from this the flowers are produced. Bear in mind that the double yellow especially is a strong grower, and that if in some years it fails to yield flowers, this is not to be attributed to neglect of pruning but to the effect of frost on the young bloom buds. A double yellow Banksian covers a considerable part of the south wall of a house at Havering-atte-Bower, running right up to the eaves of the roof, passing over and between the windows, and completely covering the wall space with its dull green foliage. In normal seasons the plant about the second week in May is one mass of straw-coloured flowers.

seen *alpina*, the bright-red single of May, and pink single *lucida*, flowering in August, the latter forming a handsome shrub, the shoots of which, with its luxuriant foliage, being in special requisition by the gardener for trimming the old-fashioned round and closely packed nosegay with which he presents us on visiting his garden. There are also some pillar roses of *multiflora simplex*, with its blackberry blossom flowers, and the Austrian Copper and Yellow, in some sheltered spot near a wall or climbing up the house.

We notice the double roses. The varieties are many, and in several instances too much alike for us to tell the difference. The majority are varieties of the Damask and Provence. We miss the varieties of the moss—there were but three in those days—but the common moss is there in abundance. Nor do we see the Ayrshires, grown in the writer's garden by his grandmother, on tall standards 10 or 12 feet high, with shoots trailing to the ground, bearing masses of flowers. We are ten years too soon for them.

Although the roses bear but one crop of flowers, yet they are not all in bloom at the same time; that result has been avoided by judicious pruning. Some of the shoots on the same plant—of the Damask and Provence—were pruned in October, the others left until April. By this means a succession of flowers is obtained, and what is further noticeable, from these roses one and all comes a sweetness of perfume rarely to be found in present-day varieties. We have said they are all summer flowering; but one at least is perpetual by nature: the Blush Monthly, now called the Old Blush

or Common Monthly, and two are perpetual, or nearly so, by artificial means: the Red Monthly and the White Monthly, damasks which, by pruning late in spring, yield flowers not only in June, but again in September, and even in October. But time flies; we must not linger in this old-time garden, for between 1820 and the arrival of the perpetual we have many welcome additions to the summer-flowering roses to review. So we will just ask the gardener for a list of his best varieties, and bid him farewell. Here is the list. What memories of the historic past some of these names revive!

Grandmother's Roses. 1820

Rosa Gallica: Aimable Beauté, Atlas, Belle Aurore, Belle Carmosie, Belle Pourpre, Belle Violette, Bijou, Blue and Purple, Blue Purple, Blush Hundred-leaved, Bright Purple, Brunette, Carmine Brillante, Chancellor, Couleur de Feu, Dark Marbled, Dark Violet, Delicious, Dingy, Double Velvet, Double Marbled, Dutch Tree, Dutch, Hundred-leaved, Early Ranunculus, Favourite Purple, Fiery, Flanders Giant, Goliah, Granaat Appel, Grand Purple, Infernal, Italian, La Grand Belle Pourpre, Leyden, Light Purple, Lisbon, L'Ombre Agréable, L'Ombre Superbe, Maiden, Malabar, Mignonne, Mignonne Striped, Mignonne Incised, Mignonne Blush, Mirabelle, Montaubon, Morocco, Mundi, Nonsuch, Officinal, Ornament de Parade, Paestana, Perruque, Petite Hundred-leaved, Plicate, Pourpre Charmante, Pompadour, Princess, Prince William the Fifth, Pyramidal, Queen, Red and Violet, Royal Purple, Royal Virgin, Saint John's, Shell, Single Velvet, Singleton's

Hundred-leaved, Spanish, Stadtholder, Triumphant, Tuscany, Velours Pourpre, Violette et Rouge.

Rosa Centifolia: Aurora, Beauté Supréme, Blandford, Black Mottled, Blue, Blush Royal, Blush Cabbage, Brussels, Bouquet Rouge Royale, Bright Crumpled, Burning Coal, Cardinal, Carmine, Cherry, Cluster, Cupid, Dragon, Early Hundred-leaved, Elysian, Emperor, Grand Cremois, Imperial Blush, Juno, King, Lurid, Majorca, Malta, Mignonne Scarlet, Mignonne Crimson, Neapolitan, Nonpareil, One-sided, Paragon, Persian, Plato, Poppy, Portland, Pourpre Aimable, Pourpre Favourite, Pourpre Violette, Prolific, Proserpine, Provins Single, Provins Common, Provins Cabbage, Provins Damask, Provins White, Rouge Superbe, Royal Red, Siren, Spong's, Striped Nosegay, Superbe Carmine, Surpassante, Trafalgar, Versailles.

Rosa Centifolia Muscosa: Single Moss, Double Moss, Double White Moss.

Rosa Centifolia Pomponia: De Meaux, De Rheims, Dwarf Bagshot, Pompone, Proliferous Pompone, St. Francis.

Rosa Damascena: Blush Belgic, Blush Monthly, Blush Damask, Early Blush, Fringed, Four Seasons, Great Royal, Grand Monarque, Incomparable, Imperial Blush, Lesser Belgic, Pale Cluster, Red Damask, Red Monthly, Red Belgic, Rouge Agathe, White Monthly, York and Lancaster, Zealand.

Rosa Alba: Celestial, De Belgique, Full Double White, Great Maiden's Blush, Moraga la Favorite, Semi-double White, Spineless Virgin.

DIVISION CENTIFOLIA

The earliest of all the cultivated roses are comprised under this division, including the roses of ancient Rome and mediæval England, the best known species being *R. centifolia*, *R. damascena* and *R. gallica*. From these are derived nearly all the so-called double roses in cultivation a hundred years ago. Let us take them in order.

The Provence or Cabbage Rose (*Rosa centifolia*)

Rosa centifolia, the original species, and the parent of the large class of Cabbage Roses, is a native of the south of France. Early writers since it was found in the old French province of Provence, called it *R. provincinalis* or the Provence Rose; it is also met with in the groves of Mount Caucasus. Growing on the shores of the Mediterranean it became the popular rose of ancient Rome, and is probably the Hundred-leaved Rose of Pliny. The date of its first introduction into England is given as 1596, and is now known as the Common Cabbage, a rosy pink variety. In the early days of the last century, the Cabbage Rose held the premier position in English rose gardens, more than seventy varieties appearing in the rose catalogues. The names of some, as will be noticed in the list given on page 58, indicate the date on which they were sent out, for such names as Versailles, Trafalgar, Brussels, Emperor, King, &c., take us back to the days of Napoleon I. What the Hybrid Perpetual was in the latter decade of the nineteenth century, that the Cabbage Rose was at the beginning. Deposed from its leading

position and represented by only three or four varieties in present-day lists, it may still be found, a relic of the past, in the gardens of the old manor-house, the farm homestead and the cottage, where it grows neglected and untrammelled. Many an old variety, the name of which is now quite forgotten, may be seen growing as a bush in cottage gardens of remote country districts. The Unique or White Provence, notwithstanding its shortness of growth, was at one time a great favourite. It was brought to public notice by Mr. Grimwood in 1777, who discovered it in a baker's garden in Suffolk, where it had been planted by an observant carpenter who found it in or near a hedge in a garden where he had been working.

Hybrids of the Cabbage Rose have been raised by crossing *R. centifolia* with *R. gallica*, and as these have been called by the same name (Provence) by French rosarians, as much difficulty in classification has resulted as now exists between Teas and Hybrid Teas.

The distinguishing characteristics between the Cabbage and Damask Rose is that whereas the long sepals of the latter are reflexed during the time of flowering, in the former the sepals are not reflexed at any period. The foliage is large, leaflets broad and wrinkled, prickles unequal, larger at the base and falcate. Flowers open globular, chiefly of varying shades of pink, petals broad, fruit oblong or round, but never elongated. Perfume very fragrant.

As to cultivation, where the soil is heavy the Cabbage Rose thrives well if budded on the brier; but on light soils it is best on its own roots, propagated from suckers,

not cuttings. The Damask will strike root readily from cuttings, not so the Cabbage. As the Cabbage does not form a compact bush, it should be pruned hard back to about three eyes, otherwise it will become tall and straggling, yielding inferior flowers.

The Miniature Provence Rose or Pompon

The roses of this class are some of the oldest varieties of the Provence in existence, being the Provence Rose in miniature. They are dwarf and compact in habit, flowers rosette in form, very double and less than an inch in diameter. Blooming remarkably early, and deliciously scented, they were once great favourites, and were grown as edgings. The best-known variety is a light pink, called De Meaux, which gave its name to the whole class in our grandmothers' days. As bringing with them old-time memories we should not like to lose them, otherwise they have now been superseded by the more perpetual dwarf polyantha.

The Moss Rose (*Rosa centifolia muscosa*)

Who does not know the Moss Rose, the Common Moss especially? Numbering about three varieties in the early years of the last century the Moss became a great favourite, and by the middle of the century there were over fifty varieties in cultivation. Now we are content with about a dozen, and of these we could dispense with six. For with the exception of some perpetual varieties—which, by the way, are too double and globular to be elegant—the Moss Rose is only summer

flowering. The better varieties are those that approach to the single, such as Blanche Moreau White Bath, and best of all the Common Moss.

The origin of the Moss Rose is obscure; it is probably a sport of the Provence. Had it been a distinct species it would have been single and preceded the Common Moss, which came from Holland in 1596. It has all the characteristics of the Provence with the addition of the so-called moss on sepals and stem. That it is a sport from the Provence is suggested by the fact that plants raised from seed do not always show moss. We know that the Moss Rose has a tendency to sport, and it is remarkable that no varieties of the Moss were in cultivation between 1596 and the end of the eighteenth century. In 1810 a bush of the Common Moss in a garden at Clifton was found bearing white flowers from which we now have the fixed sport called the White Bath or Clifton Moss. Mr. Rivers in his "Rose Amateur's Guide" mentions another White Moss, produced about the same time and under similar condition in a nursery at Battersea. The Pompon Moss or Moss de Meaux was discovered by Mr. Sweet in 1814 in a garden at Taunton. Obtaining possession of the plant for £5 he propagated it, selling the young plants at a guinea each.

Regarded as a variety of the Cabbage, the Moss Rose requires the same method of cultivation. Planted in a rich soil, not too heavy, and well pruned, it will produce good blooms, neglect to prune and it will become a straggling plant with small-sized flowers. It is suitable for beds, or slopes, the long shoots being left and pegged down will break right along the stem, and a profusion of

flowers will result. But bear in mind the Moss that we are now considering has only one crop of flowers annually, and the best place for it, if space is limited, is on the herbaceous border, where, together with other flowers, it will bloom in its season.

The Perpetual Moss

About fifty years ago a new and apparently increasing race of Mosses appeared, called the Perpetual Moss. These were autumnal-flowering roses, but being double they lacked the elegance of the singles. Less pointed in bud and less mossed, most of them have more or less gone out of cultivation. Of those that remain, the two best are Madame Ory and Salet raised by M. Robert of Angers in 1854; they are very good and should not be lost to sight. These two bright rose varieties were grown by my father as standards, and were great favourites. Of the two, Salet is the more vigorous, but they are equally free flowering and their fragrance is delicious.

The French Rose (*Rosa gallica*)

R. gallica has more correspondence with *R. centifolia* than with any other summer-flowering variety, but differs from it in the following particulars. It has stiff, upright, flowering shoots, absence of large prickles, rigid leaves, smaller petals, more compact in habit and the leaves are not edged with glands. Termed *gallica* from being a native of France, it also grows abundantly in Italy, Switzerland, and Austria; and since it is found at Miletus it is supposed to be the *R. milesiana* of Pliny. The date

of its introduction into England is uncertain, but probably of considerable antiquity, though not so ancient as *R. damascena.*

On account of its strong perfume, conserves of roses employed for medicinal purposes are prepared from its petals, the town of Provins being the chief centre of this industry, near which fields of roses are cultivated. It is recorded that when, in 1770, Queen Marie Antoinette, entering France to be married to King Louis XVI., stopped the night at Nancy, the maidens of Provins prepared for her a bed made of rose petals. Twenty years later Paris made her a bed of thorns! In 1828, when Charles X. visited Provins, he was received in state, and the rose maidens presented him with flowers and conserves of roses. From the great rose industry carried on at Provins it has been imagined, but without foundation, that it was from this town that the Provence rose derived its name, the confusion arising between Provins, the town, and Provence, the district or county.

R. gallica bears seed freely, and, as is evident from the long list of gallican roses given on page 57, innumerable varieties came into cultivation. Some fifty years ago varieties could be counted by the hundred, and it is stated that two thousand different sorts were grown by Messrs. Loddings, of Hackney. One cannot but think that the distinction lay more in the names than in the roses, but such a statement, however, shows the popularity once attained by the French rose. Owing to the rise of autumnal-flowering roses very few are now in cultivation, the chief of these being the common red, sometimes called Red Damask, Tuscany, a deep claret

ROSA GALLICA
(*half natural size*).
ONE OF THE PARENTS OF THE HYBRID PERPETUAL.
From 'Les Roses,' par J. P. Redouté.

red, and the striped Rosa Mundi the last-named being the best of several other striped varieties, and which are termed by Thory *R. gallica versicolor*. The same eminent French authority further states that Rosa Mundi derives its quaint name from Fair Rosamund, the mistress of Henry II. Since Rosa Mundi is so frequently, but incorrectly, called "York and Lancaster" it may be as well to note in passing that the true York and Lancaster is a damask and not a *gallica*. And again, with reference to the common red *gallica* often described as Red Damask; this rose is not a variety of *R. damascena*, and therefore to call it damask is misleading.

Any one acquainted with the French rose knows its peculiar habit of throwing up suckers at some distance from the main plant, and how, if left unchecked, it will smother or mix itself with the neighbouring plants. When visiting the town and monastery of Assisi, the birthplace and home of St. Francis, the writer was taken to see the little garden of roses in the courtyard of the chapel of Porziuncula. The space enclosed was completely covered with the rose which was growing there in the time of this great saint. It was *R. gallica*, which had doubtless spread by suckers from a single plant. Lindley states that in the vicinity of Wartzburg *R. gallica* grew so luxuriantly as to injure the corn by its creeping roots; which is quite possible for we know by experience that it is with difficulty eradicated when once it has become established.

In pruning cut out all the weak wood and that which has borne flowers, preserving the strongest shoots of the midsummer growth. These should be shortened to

within six or seven eyes, pruning some of the shoots in October and the others in April to prolong the flowering season.

The special beauty of the French rose lies in the fully expanded flowers and the brilliancy of the golden stamens. To stage it to perfection the blooms should be cut in the bud stage, just as the petals before they unfold are bursting the sepals. If so gathered early one morning they will be in perfection on the following morning, for, like most of the singles, the buds develop after they are cut. If gathered fully expanded, the colour of both petals and stamens will soon fade.

The Damask Rose (*Rosa damascena*)

The Damask Rose, as the name indicates, is a native of Syria—the Damascus Rose—and was first brought to the notice of Europeans in the time of the Crusades. When Saladin, in 1187, recovered Jerusalem from the Crusaders, he is reported to have used rose water with which to purify the Mosque of Omar after it had been used by the Infidel as a Christian church, five hundred camel loads of roses from Damascus being brought for this purpose. We have previously seen that a Syrian rose, doubtless the Rose of Damascus, was the rose of the House of Lancaster.

The earliest varieties of the Damask are supposed to be the Red Monthly and the White Monthly, both producing a second and even a third crop of flowers in favourable seasons. These are in part the progenitors of the Hybrid Perpetual. The Damask was for long a great favourite in English gardens, and at the close of

the eighteenth century efforts were successfully made to increase and improve it, so that by 1830 it formed a most extensive class. In those days it was an exhibitor's rose. To distinguish it from both the French rose and the Cabbage, it should be observed that the Damask is a stronger and more bushy grower, having larger prickles, elongated fruit, and more numerous flowers. Also the wood is greener, the pale green leaves remarkably downy, and more noteworthy still, no other rose possesses such a delicious scent. Perhaps if modern raisers were to resort to the Damask once more, crossing it with a perpetual, we should regain that which makes the rose so popular, and in which most of the new present-day roses are so lamentably deficient — a rose perfume.

The term damask was at one time applied to many dark red roses that were not varieties of *R. damascena*, and much confusion has resulted in classification. The best example of an old Damask is the York and Lancaster —may I repeat that this is not a striped variety of *R. gallica* commonly known as such, but a very different kind of rose. The true York and Lancaster is a vigorous grower, developing when established into a bush some 6 or 7 feet high, and thick in proportion. From its peculiar pale green wood, clothed with soft, velvet-like leaves clusters of medium-sized flowers are produced, semi-double and petals uneven. These flowers when expanded are somewhat flat, irregular in outline, of a pale flesh colour diffused with pink. The petals are blotched and striped with a deeper red, and sometimes the whole petal is all red or all flesh colour. The date of this very old variety is unknown; it may have been

known to Shakespeare and it may have blossomed in the Temple Garden. It is an abundant bloomer, and its fragrance is unmistakable. A plant of this delightful rose is worthy of a place in every garden. Another variety which should not be lost sight of is the pure white Madame Hardy, sent out in 1832. It is not, however, a pure Damask, as any one can see, and is probably a cross with the Cabbage Rose.

The Damask is quite hardy, and will do well in any situation. Being vigorous in growth it should not be pruned hard, or it will make wood at the expense of bloom. Masses of flowers is what is wanted from the Damask in the present day. Thin out all the old and the weedy growth, the strong shoots being shortened to about 2 feet. Before the rise of the Hybrid Perpetual the Damask was the rose on which the exhibitor relied, together with the Cabbage, for exhibition blooms. These were obtained by cutting it hard back, disbudding, and mulching. By this treatment the flowers were much increased in size.

The White Rose (*Rosa alba*)

R. alba is a widely distributed species, being found not only in Europe (Piedmonte), but as far east as China. According to some authorities it was introduced into England in 1597, whilst others suggest that it is the White Rose of the House of York. It is very upright in growth, and vigorous, forming a bush 4 to 7 feet high, but not spreading out like the Damask. The wood is a grey-green, and the leaves, which are pointed, are of a pale dull glaucous green, both root-shoots and

leaves having the appearance of being slightly covered with a greyish powder.

The White Rose was very popular in days gone by, and may still be seen in the cottage gardens of rural England. The first plant of it obtained by the writer was a gift from a cottager. At that time it was to him an unknown rose never having seen it before; but since then he has noticed in the cottage gardens of the same district several plants possibly all coming from the same source.

This rose is very free flowering; the blooms are almost single, pure white with bright yellow stamens. Taking longer to open than the *gallica*, and more lasting when fully developed, they may be gathered in a more advanced stage. It is quite distinct, and well worth growing. The best known semi-double variety is Maiden's Blush. On looking down the list of varieties of *R. alba* as recorded in the list already given, one wonders what those varieties were like which bore such names as "Moraga the Favourite" and 'Spineless Virgin!"

Hybrid China (*Rosa indica hybrida*)

The Hybrid China marks an epoch in the culture of the rose. It is a production of the early part of the nineteenth century and the pioneer of autumn-flowering roses. This class is the result of crossing varieties of the *gallica* and Provence with *R. indica*. It is worth noticing that, although *R. indica* or China is a perpetual, yet these hybrids whether or not the China is the seed-bearing parent, all, with but one exception to be mentioned presently appear to have been only summer

flowering. It seems, therefore, that the more correct name for this class should be either *R. centifolia* or *R. gallica hybrida.*

What a sensation the advent of these, for the most part, strong growing, free-flowering pillar roses, must have created. Nothing like them had been seen before. No wonder they were in great demand and formed a class almost as numerous as the French rose of a preceding generation. Some few are with us still, and may they long continue. Amongst these is Blairii No. 2, raised by Mr. Blair in 1845, a most rampant grower, throwing out shoots 10 or 12 feet long, and quickly covering the wall space or pillar. The flowers are of fair size and double, blush with rose-coloured centre. It is frequently to be seen covering the front of old farmhouses, for it at one time obtained great popularity. Two other excellent examples of the Hybrid China are Madame Plantier, pure white, sent out in 1835, and Fulgens, a brilliant crimson.

Included in this class is Gloire de Rosaménes, raised by M. Vibert in 1825, a beautiful scarlet-crimson almost single variety, but somewhat tender in constitution. In this rose we can detect the strain of *R. indica.* Here we have a new break, a rose that flowers well into the autumn. I have gathered a bunch of perfect flowers as late as November, and yet the rose world had to wait another twenty-five years or so for a race of Hybrid Perpetuals; but, as we shall see later, it came at last, and Gloire de Rosaménes became the parent of two leading varieties, Géant de Batailles and Générale Jacqueminot.

The Hybrid Bourbon Rose (*Rosa Bourboniana hybrida*)

The Hybrid Bourbon Roses are descended from the French and Provence crossed with an autumn-flowering variety found by M. Breon in the Mauritius, and called by him L'Ile de Bourbon Rose. This was a new departure, for unlike the Hybrid Chinas, one parent of which was a species, the Bourbon itself was a hybrid. The roses of this class can be distinguished from the Hybrid Chinas by the stout waxy foliage, which remains on the plant until late in autumn. They should be pruned well back to five or six eyes from the base, much harder, therefore, than the Hybrid China. The best of the old varieties are Coup d'Hébé (Laffey, 1840) and Charles Lawson (Lawson, 1853).

DIVISION LUTEÆ

The Austrian Brier (*Rosa lutea*)

This is a small, but particularly attractive class of yellow roses, comprising some of the oldest varieties in cultivation. The Austrian Copper and Austrian Yellow single roses are the original species, and as such have been dealt with in Chapter IV., and no more need here be said of them, except to remark that they, together with the two following varieties should be in everybody's garden. And the importance of the point must be my apology for repeating that the roses of this class, if flowers are desired, must never be pruned. Being brier roses they produce their flowers from the second lateral

shoot, as described on page 51. Occasionally, the very old and all the dead wood may be cut out, but nothing more. If the plant is thin at the base, the strong last year's growth should be bent over, causing the plant to break from the base or from eyes low down the stem. Forgive the repetition.

The two varieties referred to above are Harrisonii and Persian Yellow. The first is a double yellow, said to have been raised from seed in America and sent out by Mr. Harrison in 1830. The flowers of Canary Yellow before expansion are globular, opening out flat. It is quite hardy, forms a large bush, and is one of the earliest to bloom. Persian Yellow is somewhat similar in growth, flowers full but irregular in outline and of a deep orange-yellow, perfectly distinct from any other rose. It was brought from Persia by Sir H. Willock in 1838. All these roses love pure air; they are unsuitable for gardens situated near large centres of industry, where the atmosphere is charged with smoke. Given good air, a warm, dry soil, they will flourish; but keep your knife in your pocket.

DIVISION SPINOSISSIMÆ

The Scotch Rose

The Scotch Rose, a hybrid of *R. spinosissima*, already described in Chapter III., is familiar to all; a bush of brown stems, clothed with dense prickles and small leaves, and when in bloom covered with small globular flowers, like little white balls. This pure white variety is about the only one now in general cultivation, but a

century ago Scotch Roses were very popular, over two hundred varieties being catalogued, ranging in colour from pure white to pink and for the most very much alike.

In the matter of treatment, the Scotch Rose should not be pruned, except in the case of young plants to promote bushy growth. Left to itself it will develop into a shrub, about 4 to 5 feet high and thick in proportion. The plant throws up suckers some distance from the centre, which, when rooted, may be removed to form new plants.

Like the wild species, the Scotch Rose blooms very early, coming into flower at least a fortnight before most of the summer roses. But the season of flowering is very brief, and it is therefore more suitable for borders and shrubberies than the rose garden.

The Perpetual Scotch

In addition to the summer-flowering varieties, there is a Perpetual Scotch, called Stanwell Perpetual the flowers of which are rosy blush, double but less cupped than the White Scotch. The growth is not so vigorous, and the habit is spreading rather than upright. In wood and foliage it is unmistakably a hybrid of *R. spinosissima*, but in habit and outline of blossom it resembles the Damask. This suggests its origin: a Scotch rose fertilised with the Damask Perpetual. It was raised at Stanwell hence its name. Stanwell Perpetual is a good autumn bloomer, and very free.

The Hybrid Sweet-brier (*Rosa rubiginosa hybrida*)

To the chief varieties of this class we are greatly indebted to the successful efforts in hybridisation of the late Lord Penzance. Between the years 1892 and 1895 he raised a series of pedigree Hybrid Sweet-briers, the result of intercrossing *R. rubiginosa* and some Hybrid Perpetuals. These all more or less retain the special characteristics of the species, such as the form of flower, perfume of foliage, and general habit, and at the same time bear a resemblance to the Hybrid Perpetual in colour. In some few instances they have a second crop of flowers, but for the most part are summer-flowering roses.

Like the ordinary sweet-brier, they will form a perfect and impenetrable hedge, and if this is desired should be planted in a double row, and about 4 feet from plant to plant. When the plants have made strong root-shoots, which they will do the second season after planting, these shoots should not be cut off, but bent over to the nearest plant on either side. This treatment will create lateral growth low down and along the bent shoot. As specimen bushes they are very useful, and are most suitable for shrubberies. No pruning is required, but thinning may be resorted to if it is necessary to keep the plants within bounds. The best varieties are Lady Penzance, single, coppery yellow; Anne of Geierstein, single, dark crimson; and Flora M'Ivor, single, white shading to rose.

A very old variety, and quite distinct from the Penzance briers is Hebe's Lip, ivory white, the petals

being tipped with red—the lip of Hebe. It is probably a variety of the *gallica* impregnated with sweet-brier, bearing a strong likeness in growth and general habit to *R. gallica*. It is mentioned here because it is sometimes classed as a sweet-brier.

DIVISION CINNAMOMEÆ

The Boursault Rose (*Rosa alpina hybrida*)

The Boursault Rose derives its name from the raiser of the first variety, M. Boursault, a French amateur rosarian. From the general character of the wood and habit, it is evident that one of the parents was *R. alpina*, for the shoots are fairly long, jointless, and flexible; the wood is reddish and very smooth, in some varieties entirely devoid of prickles. The flowers are double and freely produced in clusters. Although classed as a climber, the Boursault is more of a pillar than a climbing rose. It can be recommended for planting in shady situations where the sunshine seldom or ever reaches it. Like *R. alpina* it requires no pruning. One of the best varieties is Gracilis bright pink, semi-double, sent out in 1796.

DIVISION SYNSTYLÆ

The Ayrshire Rose (*Rosa arvensis hybrida*)

The Ayrshire Rose originated from *R. arvensis*, retaining the characteristics of the species, especially its climbing and trailing habit. The first Ayrshire is stated to have been raised in Scotland from a foreign rose; hence its

name. The varieties of the Ayrshire have perhaps been surpassed by the hybrids of *R. sempervirens*, but it is quite distinct and worth growing for the following reasons: (1) It comes into flower a fortnight earlier than *R. sempervirens*; (2) it will grow almost anywhere, under or up trees, or where bushy undergrowth is required; (3) it will trail along banks, and if budded on tall standards will send down streamers. Unlike *R. sempervirens* and its varieties, the flowers of the Ayrshire are produced singly, yet in great profusion. The best varieties are Dundee Rambler, Bennett's Seedling, and Splendens, the last named being one of the finest pillar roses. The Ayrshire makes most luxuriant growth, and requires no pruning.

The Evergreen Rose (*Rosa sempervirens*)

The Wild Evergreen Rose, *R. sempervirens*, abounds throughout mid-Europe especially in Italy near Pæstum, Greece, and the Balearic Isles. It is a rambling plant; shoots very long, slender, and bright green; armed with slender falcate red prickles; leaves dark green, shining, with no pubescence; flowers produced in corymbs, single, white, and fragrant. It is supposed to have been brought to England in 1629.

In the strictest sense of the word no rose is really evergreen. But because some species and their hybrids retain their leaves until late in the winter, they are, as compared with other roses, evergreen. And this is the case with the class of rose before us.

Like the more modern Penzance briers, the varieties of *R. sempervirens* are chiefly due to the labours of one

man. Most of these were raised by M. Jacques, the head gardener at Château Neuilly, the residence of Louis Philippe, Duc d'Orléans, who became king of the French in 1830. The varieties were, for the most part, named after the members of the duke's family, the best of these roses being Adélaide d'Orléans (1826), Léopoldine d'Orleans (1828), and Félicité Perpétué (1828).

The varieties of the Evergreen Rose are adapted for the same purposes as the Ayrshire, but they have this advantage over the Ayrshire—their leaves remain on the plant and preserve their freshness and colour for at least nine months of the year. Not till the sap rises for the spring growth do the leaves fall. Thus the Evergreen Rose is admirably adapted for pillars, arches, and walls of the house. It is very hardy and of such vigorous habit that it will send up root-shoots 10 or 12 feet long in a single season. Flourishing in any kind of soil and situation, it is one of the easiest to cultivate. It should never be pruned; simply cut out the old wood to admit light and air.

Few objects of the garden are more beautiful than a great bush of the Evergreen Rose when left to ramp and flower as it pleases. The great corymbs of rosette blooms with pendent foot-stalks cover the whole plant, and fall in cascades of colour like streaming stars from a sky rocket. And further it waits until the rush of summer flowering is nearly over before it comes into bloom. The best varieties are Léopoldine d'Orléans and Félicité Perpétué, both bearing small rosette-shaped flowers; the former white tipped with red, the latter somewhat smaller blooms of creamy white.

The Climbing Multiflora (*Rosa multiflora scandens*)

R. multiflora simplex, the parent of the modern class of ramblers, was introduced into England in 1781, and has been described in Chapter IV. Like the original species, the hybrids are of vigorous growth and climbing habit, producing clusters of small flowers. This race of roses is comparatively new, and attractive additions are being sent out.

At present the most popular is Turner's Crimson Rambler. A single plant, it is stated, was brought from Japan by a naval lieutenant and given to a friend in Leeds. This plant came into the possession of Mr. Turner of Slough, who propagated and distributed the plants under the name of Turner's Crimson Rambler. Is it possible that it may be a distinct species? No description of this well-known rose is at all necessary. But a word or two on cultivation may not be out of place. It thrives best, not on a wall, but in open spaces, and as a pillar rose. Careful observation will show that the strongest growth comes direct from the base, from the root-shoots, and that it is from these strong fat shoots, made immediately after the blooming is over, that next year's flowers come. This being the case, it is obvious that these shoots must be neither cut away nor even shortened; they must be left untouched. But these growths being soft and full of pith, are liable to frost-bite if not ripened before the winter sets in. This ripening will be greatly assisted by cutting out the wood that has just flowered—it is of no further

use, it will not flower again—to admit the sun and air to the young and immature growth.

From this rose by hybridisation several other excellent varieties have been and are being obtained. We can only hope that before long one may arrive that will be a perpetual. When shall we have a perpetual Crimson Rambler with the perfume of a Damask?

CHAPTER VI

AUTUMN-FLOWERING ROSES

The Hybrid Perpetual Rose—The Hybrid Tea Rose—The Bourbon Perpetual Rose—The China Rose—The Tea-scented Rose—The Noisette Rose—The Dwarf Polyantha Rose—The Japanese Rose—The Perpetual Scotch—The Perpetual Moss.

Let us now briefly pass in review the development of the rose from the days of our grandparents to the present day. The rose of our grandparents was a flower lasting only a few weeks, now it is with us from April to November. Seventy years ago, because the rose was the flower of a season, a month, the month of June, it shared the flower border with the tulip, hollyhock, and dahlia, but with the rise of the perpetual-flowering race of roses it has attained a position in our gardens far above that of any other flower.

Realise, if we can, the revolution in the rose world created by the perpetual. But as in all revolutions so here the swing of the pendulum was felt. Summer-flowering roses, notwithstanding their scented loveliness, were despised, forsaken; away with Damask, Cabbage, and *gallica;* replace them entirely with perpetuals. Alas, that it should have been, but so it was, and in that sweeping revolution many old favourites passed away for ever.

The influence of the new race, the perpetual, became apparent about 1840. It is strange that it did not

ROSA DAMASCENA ITALICA
(*half natural size*).
"ROSE OF THE FOUR SEASONS."
ONE OF THE FIRST PERPETUALS.
From 'Les Roses,' par J. P. Redouté.

come earlier. For whilst rosarians were intent upon raising new classes of roses, the Ayrshire, *sempervirens*, and Hybrid Chinas, for example, there was here and there a perpetual-flowering variety ready at hand that only required cross-fertilisation, patiently persevered in to the second and third generation, to have produced the race of perpetuals at least twenty-five years earlier.

In 1796 Mr. Parsons presented to the rose world the Old Blush Monthly, followed in 1810 by its compatriot the Old Crimson China. 1812 saw the advent of a Perpetual Damask seedling, stated by some authorities to have been raised in the gardens of the Palace of St. Cloud by Comte Zelieur, the Court gardener, who named it Rose du Roi, but since known as Lee's Perpetual, whilst others record it as coming out in 1819, produced by M. Souchet at Sèvres. It matters little now who is right: there it was awaiting further development. In 1825 Gloire de Rosaménes, the work of M. Vibert, saw the light, and is with us now. These were the vanguard of the great army of perpetuals destined to possess and rule the land. Others were coming, Mrs. Bosanquet and Fabvier in 1832, Cramoisie Supérieure in 1836, next the great battalions of Hybrid Perpetuals and Hybrid Bourbons, closely followed by Tea-scented Roses, Hybrid Teas, and many others.

And yet, if we may rely on historical records, an autumn-flowering rose was no great novelty. It was known in Egypt, and a common thing in Ancient Rome. We are told that the Egyptians grew a variety somewhat allied to our Old Crimson China, sending blooms in

November to various centres of civilisation. They sent a bunch to the Emperor Domitian at Rome on his birthday in November; but to the Romans it was like sending coals to Newcastle, for they had in November roses in abundance. So of this present they said: "In all the streets we inhale the perfumes of spring, and see sparkling the fresh garlands of flowers; send us wheat, Egyptians, and we will send you roses." If, then, the autumn-flowering rose is of such antiquity, why did England wait for it until the close of the eighteenth century? Travellers, crusaders, dukes, and botanists brought us many summer-flowering roses, why not the perpetual as well?

In looking back only one hundred years we are struck with wonder at the extraordinary development of the rose during that period, a development all the more wonderful since it is chiefly due to the intermingling of only four types. With the exception of a few summer-flowering kinds in the decorative classes, the roses seen at the present-day rose shows are derived from four species. That is to say, although the number of wild roses, such as those named in a former chapter, are very many, and several obtain prominence in our rose gardens, yet it is to the following parents that the leading roses seen at exhibitions owe their existence, viz.: *R. gallica*, *R. damascena*, *R. centifolia*, and *R. indica*. Some authorities go even further, and by claiming that the Damask and Provence (*centifolia*) are hybrids of the *gallica*, the original types of the modern rose are reduced to two—two progenitors, two lines of roses. And now, through cross-fertilisation, these two lines are

converging to a single point. The line of Damask Perpetual and the Hybrid Perpetual, on the one hand, are meeting the line of Chinas; Noisettes and Teas on the other—and the point of convergence is the Hybrid Tea.

The lines, be they four or two, having met, what further development can we expect? Surely none, unless a strain of wild roses hitherto excluded is introduced. Let us by fertilisation bring in *R. multiflora* and the Rambler race with its vigorous growth and free flowering qualities, the *R. rugosa* for its hardy constitution, and perhaps one day—who can tell?—we shall have dark Hybrid Perpetuals with *multiflora* habit and magnificent Teas on *rugosa* bushes. Just imagine a Perpetual Crimson Rambler bearing clusters in the finest stage of development of Générale Jacqueminot or Horace Vernet!

The Hybrid Perpetual Rose (*Rosa damascena hybrida*)

We have previously noted that the Hybrid China Roses are the offspring of varieties of the French and Provence roses fertilised with *R. indica*, an autumnal-flowering species. Although the roses produced by this hybridisation were, with one exception, like the seed-bearing parents summer-flowering only nevertheless the perpetual flowering strain was there. It skipped this generation, but came out in the next; it passed, as we might say, from grandfather to grandson and this great advance in rose-culture, the coming of the Hybrid Perpetual, was effected in the following manner.

The Damask was the premier rose in the early days

of the last century, and fertilising the Damask with the Hybrid China produced in this, the third generation from *R. indica*, the Hybrid Perpetual, which thus combines in its constitution the strain of *R. indica*, French Provence, and Damask, the influence of the last named preponderating. It is, however, difficult to account exactly for the Hybrid Perpetual, because the scientific method under which the seed of modern roses is obtained was not pursued at that time. Apparently the practice was to gather the seed heps which had been naturally fertilised by wind or insects, and sow the seed in beds in the open; thus they were chance seedlings from flowers naturally, not artificially, fertilised.

The first so-called Hybrid Perpetual, as we have observed, was that known as the Damask Perpetual, Rose du Roi, or Lee's Perpetual, but since this variety is said to have owed its origin not to a cross with another hybrid, but to a doubtful species, the Rose of Pæstum, and is thus, like the Hybrid China, a rose of the first generation, we are not surprised to learn that several of the best varieties, of which the Damask Perpetual was the parent, were only summer flowering. Before a reliable race of Hybrid Perpetuals was obtained, the Damask Perpetual had to be crossed with Bourbon and China, and for this we are indebted to M. Laffay, the originator of the Hybrid Perpetual as we have it now. Some of the earliest and most noteworthy sent out were Princess Hélène (1837), Duchess of Sutherland and Madame Laffay (1839), Queen Victoria (1840), La Reine (1843) and William Jesse. By 1840 twenty varieties were catalogued, and although many more were brought

out during the next twenty years, nevertheless they were not of such excellence as to entirely supersede the old summer-flowering favourites. The one hundred varieties which, in 1857, won the chief prize for cut roses comprised only fifty-four Hybrid Perpetuals, twenty-three others being summer flowering. The Hybrid Perpetual reigned supreme from 1860 to 1890; there were no Hybrid Teas or large Teas to challenge its position.

Extensive as this class is, the varieties appear to range themselves in distinct groups or types, differing in wood, foliage, flower, and habit. This is due to their parentage, for they have all come from a comparatively few varieties, the chief of which are as follows:—

Gloire de Rosamènes (Vibert, 1825), a rose of an earlier generation than the others, and to which it appears we are indebted for Géant des Batailles and many other brilliant roses with red prickles, such as Alfred K. Williams. Probably also Générale Jacqueminot.

Jules Margottin (Margottin, 1853), a prolific parent, from which have been produced such types as Annie Laxton, Marquise de Castellane, Duchesse de Vallombrosa and many others.

Générale Jacqueminot (Roussel, 1853), giving us strong growing reds, as, for instance, Marie Baumann, Senateur Vaisse, Duke of Edinburgh, and most beautiful of all Horace Vernet.

La Reine d'Angleterre, presenting roses of the short sturdy erect type, such as Baroness Rothschild, Merveille de Lyon, and Gustave Piganeau.

La Reine (Laffay, 1843), from which came François

Michelon, Anna de Diesbach, and others of which these are types.

Charles Lefébvre (Lacharme, 1861), the parent probably of such smooth-wooded varieties of dark reds as Comte Raimbaud, Victor Hugo, Duchess of Bedford, and others.

Victor Verdier (Lacharme, 1859). This is the chief parent of the class. To it we are indebted for those short, stout, upright, free-flowering varieties, such as Marie Finger, Étienne Levet, Comtesse d'Oxford and Suzanne Marie Rodocanachi. Rabbits are very fond of this class, especially of the last-named variety, preferring it to any Tea or Hybrid Tea; and from this fact we may conclude that a high degree of the Tea element (*R. indica*) is contained in the Victor Verdier race.

Some Hybrid Perpetuals that were first favourites with my father—they were all grown on standards—and are numbered amongst my earliest acquaintances in the rose world, were Baronne Prévost, clear bright rose, one of the finest in those days; La Brilliante, a bright transparent red; Duchesse de Caylus, a red of most perfect form; Caroline de Sansal, very large, flesh colour; Gloire de Santenay, dark crimson; Duchess of Sutherland, rosy pink, very double; Madame Laffay, rosy crimson, most highly esteemed, and last but not least, Géant des Batailles, the brightest of all the roses—would there were more like this in the present day. A truss of this was glorious, with its dazzling, almost scarlet, central flower embosomed in fine foliage with clustering buds. We may have improved upon it in form, but not in colour. And then the perfume, the true Damask perfume of

these old favourites! For this, if for no other reason, one longs for their revival.

It would be of little practical service to enumerate here the best Hybrid Perpetuals, the list is ever changing, and the appendix will, one trusts, supply the requisite information. Since 1890 this race has remained almost stationary, the Hybrid Teas being now the progressive party. But before we pass to a few words on cultivation, permit it to be once more emphasised that we expect and must have perfume in a rose—the perfume derived from the strain of Damask in the Hybrid Perpetual; and let us hope that our eminent raisers of new varieties will give this point some little consideration. Lovers of the Queen of Flowers look for that virtue in her that makes her the queen, and without which she is but a camellia or cactus dahlia.

Beautiful in colour as the roses of this class are, yet, taken as a whole, Hybrid Perpetuals are not good autumnal flowers; they are surpassed by the Hybrid Teas, Chinas, and Perpetual Musks.

Surpassed in its autumnal flowering qualities, surpassed by the more recent Hybrid Teas in brilliancy of colours, there is at present one highly prized quality in which the Hybrid Perpetual has not been surpassed, and that is in its pure damask perfume.

When we come to consider the question of pruning and general culture of the Hybrid Perpetual we are at a loss to know exactly what to say. Each variety has its idiosyncrasy: its own virtue and fault, its own habit and growth, the knowledge of which can be obtained only by close acquaintanceship. For instance no rule as to

pruning could be laid down, even for garden purposes, which would be equally applicable, let us say, to Ulrich Brünner and Victor Hugo, nor, if required for exhibition, would the same advice on disbudding suit both Générale Jacqueminot and Her Majesty. All we can state here is that the Hybrid Perpetual is hardy, and in a normal winter requires no protection. Like most roses it does best in open situations, or apart from other flowers. It should not be left unpruned, but the weaker the variety the harder—the shorter—should it be cut, and *vice versa*.

The Hybrid Tea Rose (*Rosa indica odorata hybrida*)

The Hybrid Tea is a cross between varieties of two groups of hybrids, the Hybrid Perpetual and Tea-scented. It has been already stated that the Hybrid Perpetual is the offspring of the Damask and Hybrid China, the last-named parent coming from *R. indica odorata*, a Tea-scented species. Therefore the cross-fertilisation of the Hybrid Perpetual with the Tea increases the Tea element in the Hybrid Tea, with this further result, that whilst more activity in growth and freedom of flowering has been obtained, it has been accomplished at the loss of the red shade and sweet perfume of the Damask. The race of Hybrid Teas is, however, in its infancy, and with its approach to adolescence deeper red varieties may be expected.

The recognition of the Hybrid Tea as a distinct class may be dated at 1890. The time was propitious; lovers of the rose were yearning for something more suitable for the garden than the purely exhibition flower. The

introduction of Mr. Bennett's Her Majesty set us thinking; magnificent as a specimen bloom when seen in the exhibition tent, as a garden rose suitable for decorative purposes it was useless. Few and scentless were its flowers, and perched upon the top of stiff, mildewed, spotted stem it savoured of stubbornness and self-conceit. Was it for this that we had expelled from our collections Aimée Vibert, Maiden's Blush, Mrs. Bosanquet, Félicité Perpétué, and all our grandmothers' roses, with their delicious perfume and masses of flowers? We resolved to have them back again, and with them anything fresh that was as free in flowering, and as perpetual. This was the psychological moment for the advent of the Hybrid Tea. By referring to a catalogue we can mark their advance. In 1890 they numbered six; in 1892, twelve; in 1894, thirty-one; in 1901, sixty-five. Truly a wonderful commencement, but only a commencement; for new Hybrid Teas are coming which will far surpass in brilliancy of colour and vigour anything we have at present.

For the first Hybrid Tea we are indebted to Messrs. Paul & Son of Cheshunt, who, in 1873, sent out Cheshunt Hybrid, followed five years later by Reine Marie Henriette, raised by M. Levet, and described as a red Maréchal Niel. These two, both pillar roses, were thought by some to be red Teas of the Gloire de Dijon type, and were sometimes staged with the Teas at exhibitions. It was not until Mr. Bennett raised several remarkable pedigree roses, such as Lady Mary Fitzwilliam (1882), Grace Darling (1884), and Viscountess Folkestone (1886), that these

and others of a similar constitution were recognised as being neither Hybrid Perpetuals nor Teas, but an entirely new race. La France, raised by M. Guillot in 1867, and sent out as a Hybrid Perpetual, is now included in the Hybrid Tea class; it is, however, thought by some to be not a Hybrid Tea at all, but rather a hybrid of the China. Next to La France, and in many respects better, is Caroline Testout (1890), a light salmon pink. This magnificent variety makes a fine bush, has the longest flowering season of all the roses, except Frau Karl Druschki, and is suitable both for the garden and exhibition.

There is not a single purpose demanded of the rose which the Hybrid Tea cannot supply. Is it roses for exhibition that you want? The finest in size are among the Hybrid Teas. Is it roses to keep your garden bright from early June to late November? In this respect the Hybrid Tea surpasses all others. Roses for exhibition; roses for bedding; for pillars; for house decoration; for button-holes—you will find them among the Hybrid Teas.

The Bourbon Perpetual Rose (*Rosa bourboniana*)

Like the Hybrid Perpetual the Bourbon Perpetual is related in the first generation to a Damask Perpetual, the Four Seasons Rose, and *R. indica*. The offspring of the second generation were the summer-flowering Bourbons, described in the previous chapter, and these in turn being crossed with hybrids of *R. indica* and others gave us the Noisette Perpetual and the Bourbon Perpetual.

The original Bourbon Rose had brilliant rose-coloured

semi-double flowers with nearly evergreen foliage, the result of chance fertilisation, and the following interesting account of its discovery is given in Rivers' "Rose Amateur's Guide," on the authority of M. Breon, a French botanist: "At the Isle of Bourbon the inhabitants generally enclose their land with hedges made of two rows of roses, one row of the common China Rose, the other of the red Four Seasons. Monsieur Perichon, a proprietor at Saint Benoist, in the Isle, in planting one of these hedges found amongst his young plants one very different from the other in its shoots and foliage. This induced him to plant it in his garden. It flowered the following year, and, as he anticipated, proved to be quite a new race, and differing much from the above two roses, *which, at the time, were the only sorts known in the island.* Monsieur Breon arrived at Bourbon in 1817, as botanical traveller for the Government of France, and curator of the Botanical and Naturalisation Garden there. He propagated this rose very largely and sent plants and seeds of it in 1822 to Monsieur Jacques, gardener at the Château de Neuilly, near Paris, who distributed them among the rose cultivators of France. M. Breon named it 'Rose de l'Ile de Bourbon,' and is convinced that it is a hybrid from one of the above roses, and a native of the island."

The Bourbon Perpetual race was at least ten years in advance of the Hybrid Perpetual, became the fashionable rose of the early Victorian period, and formed then a very extensive class. The flowers are chiefly white, blush, and rose, and although the varieties vary much in habit and size of bloom, yet they are easily recognised by the wood and foliage. The wood is thick and smooth;

prickles few and scattered; leaves dark green, obtuse, waxy, and nearly evergreen. The advent of the Hybrid Perpetual race, with its more richly coloured blooms, caused the Bourbon Perpetual to decline in popularity, and a great number of varieties have gone out of cultivation. At the present day one of the best known varieties is Souvenir de la Malmaison, a grand flesh-coloured rose, of vigorous growth, a good type of the larger Bourbon Perpetual. It was raised by M. Beluze at Lyons, and sent out in 1843. A good specimen of the smaller varieties, and one often mistaken for the Old Blush Monthly, is Hermosa, a charming decorative rose, constantly in flower, and looks well when planted on borders with shrubs, or interspersed on beds with young plants of rhododendron. It is vigorous, requires little or no pruning, and is extensively grown in the United States as a stock for budding purposes. Another example of this class is Madame Bosanquet, pale flesh, semi-double, of China habit, sent out by M. Laffay in 1832. Two varieties now seldom seen, but which the writer at one time cultivated for and staged at exhibitions, are the Rev. H. H. D'Ombrain and Baron Gonella, the former clear carmine, the latter deep pink.

Now, taking Souvenir de la Malmaison as a typical Bourbon, the cause of the decline in popularity of this class of roses is not far to seek. Those who know anything of Souvenir de la Malmaison will readily admit that, however perfect and beautiful its flowers are in autumn, yet try as you will the first crop is generally a failure; the growth is slower in spring than at midsummer. The Bourbon Perpetual requires heat to induce

quick growth; tardy growth and development always tends to produce malformed flowers, and it is probable that this inherent weakness contributed in some degree to its decline in popularity when its position was challenged by the hardier Hybrid Perpetual.

The China Rose

(*Rosa indica and Rosa semperflorens*)

It has been thought by some rosarians that the roses contained under and called by the name of China Roses are derived from two distinct species, *R. indica* and *R. semperflorens*. On the other hand, to leading botanists the question is still an open one. M. Crepin, in a paper on "A New Classification of Roses," which appeared in the Journal of the Royal Horticultural Society, vol. xi., observes—"Are these two types *R. indica* and *R. semperflorens* specifically distinct, or only two varieties of the same species? This is a question to which we are unable to reply at present. Rose growers appear disposed to admit two distinct types. However, be that as it may, the section *Indicæ* has, since the commencement of this century furnished a very rich series of horticultural varieties, which have now completely transformed old collections, thanks chiefly to the singular faculty of the *Indicæ* of continual or successional flowering. This power, which constitutes perhaps one essential character of the section was unknown in the genus before the introduction of the Chinese roses." In the presence of such an authority we dare not be positive, but whether derived from one species or two, there are

certainly two distinct types in the China Rose class. Let us consider for a moment the two species referred to.

R. indica, the Old Blush Monthly, is stated to have been brought to England as far back as 1718. The wood is stout, of a glaucous green, bearing brown hooked prickles. It is vigorous in growth, flowering successionally, and the fruit is ovate in form and scarlet.

R. semperflorens, the Old Crimson, sometimes known as *sanguinea*, introduced here in 1789, is a great contrast to the first named. Its branches are slender; wood dark green; leaves shiny, tinted more or less with purple; growth short and bushy; flowers, produced singly, of a deep crimson, and the fruit is quite round. A peculiarity of this class is that the stamens fall at the same time as the petals.

The varieties, which may be grouped under *R. indica*, formed at one time a large class. These are all light-coloured roses, varying in shade from white to deep pink, are strong growers, like the Old Blush, and possessed in other respects the characteristics of the species. On the other hand, the varieties of *R. semperflorens* are of much deeper colour, mostly deep crimson shading to pink, with darker wood and foliage. Two good types of this class are Cramoisie Supérieure (1834) and Laurette Messimy. Although by repeated crossings with other sorts the line of demarcation is in some perhaps less distinct now than formerly, yet the majority of China Roses bear the distinctive peculiarities of the one or the other type.

Before we proceed to deal with the cultivation of China Roses, it is necessary to ascertain to which of these two groups the variety under consideration belongs.

The Old Blush Monthly is very hardy, and will grow almost anywhere. Planted on herbaceous borders, or with other shrubs, it is very effective. It makes a handsome specimen bush, and will form a good hedge. All the pruning it requires is the thinning out of the old wood from time to time and tipping the strong midsummer growth. No pruning is necessary to make it flower; it will do that better if left to itself. As it gives a succession of flowers right down to Christmas, and sometimes beyond, all the cutting should be left until the spring.

The Crimson Chinas are much less vigorous in growth and are quite unsuitable as specimen plants. To obtain the best results, grow them in groups or masses. Fabvier, for instance, one of the very best of the Crimson Chinas and sent out by Laffay in 1832, if grown in this way is most attractive. In the spring, cut out all the old wood from the centre of the plant, leaving about three or four of the strongest shoots, as far apart from each other as possible. By the middle of June the first crop of roses will commence to bloom, to be quickly followed by successional crops well into October; great heads, bearing flowers in all stages of development from the pointed bronzy green bud to the full blown rose. A row of Fabvier —the plants about one foot apart—one mass of deep crimson semi-double flowers with here and there a petal streaked with white, the glorious colour heightened by the golden stamens of the expanded blooms, is most charming. For this rose if for no other, the great name of Laffay will long be remembered. Fabvier is always gay, no matter how wet the weather. As soon as the

petals and stamens fall, which they do simultaneously, the round fruit begins to develop. A rose will not make seed and fresh growth at one and the same time. The seed-heads must, therefore, be removed at once, and the plant will then send up fresh flowering wood. Treated in this way, Fabvier will bloom continuously.

The China Rose of the crimson type is very active, and has but a brief sleeping period. It prefers a light soil left undisturbed, well dressed with cow manure when first planted. At one time it, together with the Old Blush type, was the only rose that flowered well into the autumn, and in consequence was highly esteemed, notwithstanding its lack of perfume.

The Tea-scented Rose (*Rosa indica odorata*)

In the year 1810 a little passenger from China, dressed in pink, came on a visit to England, where she resided for some time in single blessedness. Poor thing, she could not all at once become acclimatised, and seldom was seen out of doors. And then, just fourteen years later, another Chinese native appeared on the scene, and he was attired in a charming yellow costume. There was nothing very remarkable about these two foreign visitors; they were small and not very strong, nevertheless they were destined one day to create a revolution in the society in which they moved. At first no one took much notice of them until the arrival of a Frenchman, who, being a man of keen observation, saw something attractive in them, and, becoming acquainted, it was not long before they accompanied him back to France, where they married and settled down, feeling more at home there than they

ROSA INDICA ODORATA
(*natural size*).
From H. C. Andrews' Monograph.

had done in England. A numerous offspring was the result of this marriage, and their progeny, increasing through successive generations, have travelled far and wide, so that at the present day there is scarcely any part of the civilised world where some of the family are not known and cordially received. And what is most remarkable, the descendants of these two Chinese visitors up to ten years ago, kept themselves to themselves, and, like Israel of old, seldom marrying outside their own family circle preserved intact their racial characteristics. Of Chinese extraction they became naturalised in France, and are never more at home than in the land of their adoption. This is not a fairy tale, nor is it a page of private history; it is but the simple story of the origin and progress of the Tea-scented Rose.

The original Blush Tea-scented Rose came from China in 1810, and in 1824 Mr. Parkes brought from the same country the Yellow Tea-scented Rose. Although introduced first into England they were soon in the hands of the French rose-growers, the Yellow Tea becoming exceedingly popular in Paris, where small pot plants of it were sold by hundreds in the markets. These two roses are the parents of the great family of Tea-scented Roses. The Blush variety was fertilised with the pollen of the Yellow—the latter rarely producing a variety worth notice—and the seedlings obtained are of the colour of their common ancestors, blush and yellow. There are one or two exceptions to the rule probably owing to a strain of the Crimson China.

The rise of the Tea-scented Rose dates from 1830, but for the next twenty years good varieties were few, the

majority being tender and more at home under glass than out of doors. In 1867 Mr. Thomas Rivers writes: "The culture of Tea-scented Roses is worthy of more attention than it receives, for surely no class more deserves it. In calm weather in early autumn their large and fragrant flowers are quite unique, and add much to the variety and beauty of the autumnal rose garden." The principal Tea-scented Roses of one's boyhood were Viscountess de Cazes (1844), orange yellow; Adam (1838), salmon pink; Souvenir d'un Ami (1846); Madame Bravy (1848); Devoniensis (1838). But the most popular of all, and ever popular, was Gloire de Dijon, raised by M. Jacotot at Dijon in 1853; the first of a new type. Whether it is a pure Tea is doubtful, for apart from its delicious perfume, the hardiness of its constitution and vigorous climbing habit suggests that it possesses an infusion of the Bourbon Rose. One reason for its great popularity is this: up to 1853 Tea-scented Roses were tender, but here was a variety which could stand the cold of winter. Gloire de Dijon was, at any rate, distinct and still remains one of the very best. Bouquet d'Or and Madame Berard are good examples also of this type.

Until a few years ago, and with one exception, all the Tea-scented varieties were raised in France because in England this race hardly ever ripens its seed in the open, and therefore no seed was gathered; the modern process of hybridisation under glass was not practised, and even now British raisers are far behind those of France, as a glance at any catalogue where the raisers' names are given will prove. A catalogue before me contains a list of 103 Teas, of which only twenty-seven

are British or American, and at least seven of these are sports, not seedlings, the names of the French raisers, Guillot and Nabonnand, standing high in the list. Just as the best Hybrid Perpetuals are of British origin, so the best Teas are of French production. One English-raised variety deserves special notice; we have already mentioned it. This is Devoniensis, raised by Mr. Forster of Plymouth as far back as 1838: fifty years in advance of its British confrères. How popular it was in bygone days, every one grew it and loved it; its delicate flowers of creamy white, deepening to blush in the centre, and above all its delicious tea scent—the real thing, surpassed by none—brought rosarians to their knees. Why is it less known now? Is perfume a virtue so lightly regarded, or is it because Devoniensis is tender? Our fathers could grow it, why not we? It requires shelter; grow it near a wall with a southern aspect, and leave it unpruned. It is worth all the pains bestowed upon it.

And this is true of the race of thoroughbred Tea-scented Roses, so far as it applies to Great Britain. It is never quite at home here for it is tender and requires protection, and should it pass unscathed through the winter, a cold spring will work great injury to the young growth, causing either malformed flowers or blind shoots. The best position is on or near a wall where, if left unpruned, it will grow to a considerable height, or develop into a fair-sized bush. For instance, we have Comtesse de Nadaillac growing on a wall protected by the overhanging branches and leaves of a fig-tree: it is 10 feet high, and yields grand blooms in early June— too early to be of use for exhibition. If we want to see the Tea-scented Rose

at its very best we must go to the south of France. This is the climate in which it delights, and there may be seen great bushes of Marie van Houtte, 10 or 12 feet high, and thick in proportion, the whole bush covered with finely developed blooms. As evidence of the effect of climate look at the difference between plants of Catherine Mermet when grown in the open and under glass. Under the former condition the growth is but moderate at the best and the flowers only second-rate; but cultivate it under glass planted out in beds—the method adopted by Mr. George Mount of Canterbury—and it seems quite a different variety; strong vigorous growth and large blooms, which might well be mistaken for those of the Hybrid Tea, Caroline Testout. These remarks refer only to what we may term the thoroughbred Tea-scented Rose, not to the Gloire de Dijon type nor to the modern exhibition Teas. The latter are now so nearly approaching the Hybrid Tea that it is becoming exceedingly difficult to determine their exact class; it is, for instance, a question whether Maman Cochet and Mrs. Mawley are really Teas after all.

This is not the place to deal with the particular culture of exhibition Teas; that must come later on. Many of them are quite unsuitable for the garden, and to select varieties for the garden from the specimen blooms staged in the exhibition box, as some people have done, is certainly not advisable. At the same time some of the exhibition Teas can be so recommended: Maman Cochet, White Maman Cochet, Marie van Houtte, and Souvenir d'un Ami, if left more or less unpruned, will all form good bushes, and in the

section of decorative Teas there are many admirably adapted for beds and massing.

Tea-scented Roses, as a rule, require little or no pruning. The old wood should be cut out from time to time to admit air to the plant and induce fresh growth when needed. Cutting back like you would a Hybrid Perpetual checks their vitality. As an example of this we have a bush of Amazone—a variety generally considered to be only moderate in growth—it lies high and a lot through bearing a good crop of flowers early and late and vigorous in habit; it is planted a lot from a well-fitting stand. The same may be said of Madame Charles Quintessence. If not back yearly it is moderate in growth, but not otherwise. Marie van Houtte is another variety that thrives much better if left unpruned. It is difficult to get people to leave Teas alone; they have been so accustomed to prune Hybrid Perpetuals—these require it—that they are bent on treating Tea-scented Roses in the same way. Remember these hints on pruning relate solely to the cultivation of Teas for the garden; they in no way refer to Teas for exhibition.

Just one more remark: these roses have their origin in the species termed *R. indica odorata*; it is "*odorata*" that especially distinguishes them from the ordinary *R. indica*. Now the class of exhibition Teas gives us grand flowers perfect in outline and with great depth of petal, and the decorative Teas are most beautiful, but many modern varieties of both sections lack the essential characteristic of the race—a characteristic which raisers should endeavour to preserve—they lack the old-fashioned

perfume. We sniff and snuff our old friends, Gloire de Dijon, Madame Bravy, and Devoniensis, and we say, "Yes, what you now call these newer roses doubtless is correct; you call them 'Teas,' we notice that you do not call them Tea-scented!"

The Noisette Rose (*Rosa noisettiana*)

The Noisette Rose is a variety obtained by the fertilisation of *R. moschata*, the old Musk Rose, with the Common Blush China, *R. indica*. The first of the race was raised in America by M. Philippe Noisette, who sent it to Paris in 1817 for propagation by his brother Louis Noisette, and from this other hybrids were obtained. They were hardy and vigorous, but most of them have gone out of cultivation. One, however, remains, the pure white, almost evergreen rose, Aimée Vibert, sent out by M. Vibert in 1828. Later on, through crossing with varieties of the Tea-scented Rose, the Noisette approached more nearly to the Tea, although it retained its special features in perfume and growth; Lamarque (1830), Ophirie (1841), and Celine Forestier (1858) being good examples of this period. Lamarque is susceptible to frost, and needs training on a wall to bring it to perfection; the other two are quite hardy, and make good pillar roses. As time went on and the flowers of the later sorts increased in size, the number of blooms on each corymb decreased, so that the Noisette Rose, for all practicable purposes, has been merged in the Tea, from which it is often difficult now to detect the difference. Maréchal Niel, a Noisette, is a case in point.

The special points of a Noisette Rose are (1) its scent, the perfume of the original parent, the Musk Rose, being very apparent, especially in the earlier varieties. (2) The manner in which the flowers are produced: it blooms in clusters, coming from one corymb—that is to say, the foot-stalks of all the flowers on a stem start from the same point, like the Banksia Rose, for example. To better understand the difference between a Tea and Noisette Rose, compare Madame Hoste, a Tea, with Caroline Kuster, a Noisette. These roses are much alike when staged as specimen blooms, but look at them growing on the plant. The former produces its flowers from different parts of the stem, the latter from a corymb. Compare also the growth and formation of the flowering stalks of Lamarque, L'Ideale, and Celine Forestier with that of the Tea, and observe how liable is the bloom of a Noisette —especially Maréchal Niel—to break off at the junction of the foot-stalk with the main stem.

A study of the Noisette Rose will assist us in the matter of pruning. Like the Banksia it usually flowers, not from the gross shoots as do the Teas, but from the smaller secondary wood of a previous year. This being the case, if the flowering wood is to be retained, the plant requires careful pruning. On the whole it is better not to prune at all, except to remove the old and, sometimes, the very young wood, doing so only for the purpose of admitting light and air.

We have mentioned Maréchal Niel, sent out in 1864. Although a Noisette, it is very closely allied to the Tea-scented race. It is curious to reflect how

seldom we now see it at the rose exhibitions. At one time it was to be found in most of the stands, together with several boxes of twelves. Why is this? Can it be that it is less cultivated in the open than it was twenty years ago? It requires special cultivation to grow it to perfection. It was, I believe, first brought under the notice of the British public by the late Mr. Benjamin R. Cant of Colchester, and it is hoped I may be pardoned therefore for quoting the following extract on its cultivation from the rose catalogue of the firm of Messrs. Benjamin R. Cant & Sons: "If grown out of doors it should be given a warm, dry situation, on a west or south wall, and pruned early in April. To obtain Maréchal Niel in the height of its beauty and productiveness, it should be grown in a cool house, either planted out in the house or on a standard brier stem with the root planted outside in a carefully prepared bed, and the head carried under glass through the wood or wall side, just so as to appear above any staging (much in the same way as with vines). After planting remember the dry atmosphere of the house is likely to cause the shoots to die back unless frequently syringed until it is established and growing; water must also be given at the root when required. Prune hard back the first season to produce growth of two or three good strong shoots for training along or up the house about 18 inches from the glass, the next and following seasons cut back directly after flowering to these strong selected horizontal and upright shoots, from which you will thus get fresh wood for the next year's flowering. When the growth is young it should be carefully watched for

mildew: this is generally caused by giving air on a cold or windy day. The disease spreads very rapidly if neglected. Care must be taken to stop it immediately it makes its appearance. Feed the plant well when thoroughly established and flowering freely."

We ought not to close these notes on the Noisette Rose without referring to Chromatella better known as Cloth of Gold, a seedling from Lamarque, raised by M. Cenquereau of Angers in 1843 and brought to England by Mr. Thomas Rivers soon after. The impression made upon him when he first saw it is worth recording. It is taken from his "Rose Amateur's Guide." Writing some twenty-five years later, he says: "Even at this distance of time I have not forgotten the delight I felt on seeing this rose in full bloom at Angers in 1843. Its flowers were like large golden bells. The tree was a standard trained to a wall, and each flower was pendulous, so that their bright yellow centres were most conspicuous. Although many years have elapsed but one yellow rose has approached in beauty this grand and remarkable variety. It is true we have had new yellow Noisette Roses in abundance, all of which were to outshine my old favourite, but they have all sunk into mediocrity, and we have yet to gain a Noisette Rose from seed equal to the Cloth of Gold in form, size and colour, and as hardy and free flowering as Gloire de Dijon."

Cloth of Gold, before the introduction of Maréchal Niel was an almost universal favourite. I remember seeing what appeared to be a very old plant of this variety climbing up along and hanging over the high wall enclosing the Deanery garden, I think it was,

at Wells. Great sprays, rampant and vigorous, were thrusting themselves forward, hanging out from the wall and laden with golden flowers. I was but a lad, yet the memory of that rose has never faded. Another plant of Cloth of Gold I knew of was growing on a cottage wall near Studland Bay. About 1884 I was walking with a friend along the coast, and we came to an old thatched cottage standing flush with the road, the wall of which, on the roadside, was covered from top to bottom with a single plant of Cloth of Gold, bearing beautiful flowers. No fence protected it from the public, and we lifted up the hanging blooms and revelled in their perfume. I made a special pilgrimage to that hidden shrine of Flora some years later, but alas! the wall was bare, the old stump only of the rose remained; a severe winter had killed it.

Now one would like to know why Cloth of Gold is so seldom seen in these days. People say it is tender and such a shy bloomer. Has it really deteriorated, or is it because it does not flower the very next year after planting, and we grow impatient and set to work pruning and worrying it. Here are two examples of what Cloth of Gold will do if allowed to grow as it likes. From the size of the stems those plants were many years old, no knife had touched them, and patience had its reward.

The Dwarf Polyantha Rose

The Dwarf Polyantha Roses are related to *R. multiflora*, but how they obtained their dwarf habit and autumnal flowering is not clear. They are doubtless a cross between the species above named and a Tea-scented

variety. They are of recent introduction, the double white, M. Paquerette, given to us by M. Guillot in 1875, appears to have been the first. Other good varieties are Perle d'Or, buff yellow; Cécile Brünner, blush, and Madame Anna Maria Montravel, pure white.

The Perpetual Flowering Musk Rose

The Hybrid Musk is a rose of recent development, and of which race there are already several popular varieties. The original parent, *R. moschata*, is described on page 40, and a reference is there made to its perfume. Until the last decade or so hybrids of *R. moschata* were all summer-flowering varieties. Now the perpetual flowering in a remarkable degree has been obtained in addition to the musk fragrance.

The Hybrid Musk is a bush growing about four to six feet high. New growths are thrown up from the base in the summer, which carry clusters of bloom in September and October. This late-flowering habit is a special characteristic of the Hybrid Musk, and given a mild autumn it is quite possible to cut sprays of flowers well on into December.

The Hybrid Lutea Rose

Here we come to another class of perpetual-flowering roses, the first of which, Soleil d'Or, raised by M. Pernet-Ducher of Lyons, made its appearance in the year 1900. Nine years later this same eminent raiser gave us the second, namely, Lyon Rose, which, by reason of its remarkable and distinctive colouring, at once captivated the rose world.

These and other varieties that have followed owe their origin in part to *R. lutea*. The colour of this species and its hybrids ranges from the deep orange of *R. hemisphærica* to the pale lemon of *R. sulphurea*, natives all of Persia. The merits of the Hybrid Lutea Rose are twofold: (1) the distinctive shade of yellow or orange that pervades all the varieties, a colour hitherto unobtainable through any other strain; and (2) their long flowering season, which commences in early June, before the hybrid teas, and continues until late in autumn.

It may be asked, how can we know a variety of this class when we see it? To answer this question, a reference to the botanical description of *R. lutea* on page 17 will show that the prickles are thin and straight, not sturdy and curved as those of the hybrid perpetuals and teas. Moreover, in addition to the straight prickles, the wood is covered with small hairy prickles called pubescence.

Now, all varieties of the Hybrid Lutea Rose possess the first characteristic, the pointed prickles, as well as the special yellow shade in the flowers, and in most cases the wood is more or less covered with pubescence. Therefore, when we find a rose with (1) the special yellow glow, (2) pointed prickles, and (3) wood covered with pubescence, we know it belongs to the Hybrid Lutea class. But having regard to the inter-crossing on account of the colour that is being pursued by hybridists, it is questionable how long this distinctiveness will be maintained.

The Japanese Perpetual. See page 46.

The Perpetual Scotch. See page 73.

The Perpetual Moss. See page 61.

PART II

CULTIVATION

CHAPTER VII

THE SOIL AND ITS TREATMENT

1. Composition: sand, clay, limestone, humus. 2. Texture. 3. Moisture. 4. Fertility. 5. Water. 6. Drainage. 7. Trenching. 8. Tilth.

A SLIGHT knowledge of the soil and its treatment is essential to the successful cultivation of the rose; without this we shall be courting failure. Climate certainly stands first, but next to this comes good farming. Who does not know of instances where a farm, which under one occupier yielded poor crops, has in the hands of another been raised to a high degree of excellence, proving that the fault lay not in the land but in the farmer? So it is with the rose garden; roses grown on a naturally poor soil will, under the care of a skilful cultivator, surpass those grown on better land where the rosarian, if we may call him a rosarian, knows next to nothing of the preparation of the soil. No amount of good cultivation, however take what pains you may, can ever compensate entirely for an adverse season and climatic difficulties. The rose-grower in an unfavourable climate cannot compete with the same amount of success with the grower near the sea. The climate of Loughborough and Northampton for example, is not the same as that of Colchester or Hereford. In nine cases out of ten it is not the soil but the climate to which success is

primarily owing. Nevertheless, good cultivation will go a long way in restoring the balance.

Physical Properties of the Soil.—A really good rose soil is that which Essex folk call "loving," one which clings to the spade. When we speak of the soil we mean that part of the ground which can be tilled, and in which the plants grow. Beneath this, lying at varying depths, is

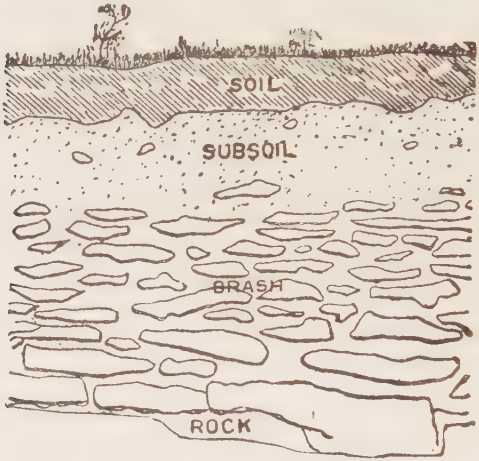

FIG. 1.—Diagram showing the Mode of Formation of a Local Soil.

the subsoil or rotting rock, and lower down still is the rock itself. The accompanying diagram will make this clear. The lowest of all is the rock pure and simple; next, broken rock or brash; then follows the subsoil or rock in a state of decomposition, and on the surface lies the soil. The principal difference between soil and subsoil is that there is more humus or organic matter in the former, caused by vegetation, the action of earth-worms,

and cultivation. Fertility is to be found chiefly in the soil, there is less in the subsoil, and none in the rock, as it lies undisturbed.

A soil is fertile in proportion to the character of its ingredients, and this fertility depends still further on the relationship of the soil to the plant. A soil may be fertile and yet be not the best for roses. Light land may be excellent for carrots, but not for roses. But before entering into details, let us see what is the general condition of fertility.

All soils are composed of certain ingredients. If in a given soil one of these almost exclusively preponderates, it then lacks the essential elements of fertility. Soil is composed chiefly of four ingredients — sand, clay, chalk, and humus; and speaking generally, without reference to roses in particular, a suitable mixture of these ingredients should be in the following proportions:—

Sand	.	.	. from 50 to 70 per cent.
Clay	.	.	. „ 20 to 30 „
Chalk	.	.	. „ 5 to 10 „
Humus	.	.	. „ 5 to 10 „

The presence of sand causes warmth, and assists ventilation; the clay renders the soil moist, and retentive of manure; the chalk assists in the decomposition of the manure, and the humus supplies and maintains the carbonic acid the life of the vegetable kingdom. For roses however, such a soil as this would be considered too light; there is too much sand, and not enough clay.

Soils are generally classified according to the

proportion of sand and clay contained in them. Thus:—

1. A sandy soil contains not more than 10 per cent. weight of clay.
2. A sandy loam contains 10 to 40 per cent. of clay.
3. A loamy soil „ 40 to 70 „ „
4. A clay loam „ 70 to 85 „ „
5. A strong clay „ 85 to 95 „ „

No. 1 is useless for all roses. No. 2 is good for Teas and such delicate roses as require warmth. No. 3 is suitable for hybrid Teas and Chinas. No. 4 is the best for the more robust roses, especially those derived from *R. damascena* and *R. centifolia*, but where autumn blooms are desired Nos. 2 and 3 will give the best results. Now let us consider in detail the four principal constituents of which the soil is composed.

Sand is composed of small grains of quartz and is nearly pure silica. The minute grains of sand make the soil very porous, which soon loses all moisture when exposed to sun and air. By itself it is useless as a soil, but as a constituent of soils it has two important qualities. First, it helps to keep the soil open, and therefore permeable to air and moisture. Secondly, the grains of sand retaining the heat derived from the sun keep the soil warm. It is permeable to moisture, but cannot retain it, the water percolating through it as through a sieve. For the same reason manure, whether animal or artificial, when applied to sandy soil soon evaporates, or passes away in the water.

Clay, essential to all rose soils, consists of hydrated silicate of alumina. Clay is invaluable, for it supplies substance to the soil, and the more there is of this the

more difficult is the cultivation of the land. Silica tends to break up plasticity. The presence of clay in the soil causes it to cling to the spade and boots, and this "loving" soil is that in which hybrid perpetuals rejoice.

Water is necessary to all plant life. If clay be burnt, its combined water is driven out, and the clay then becomes hard and, however much we may crumble it, it will never become plastic, for it has lost its water. When the soil is too adhesive and consequently difficult to work, a portion of it is burnt and then mixed with the unburnt soil. This is done to lighten the soil. But more about burning presently. Water is, of course, necessary in all soils, provided it is not found in excess. Where there is too much water it has to be reduced by draining. Clays vary in colour according to the presence of certain iron compounds and other minerals in them.

Chalk in its pure state is carbonate of lime. It is not invariably white, as might be imagined; indeed it may be almost any colour, due to the presence of iron and other impurities. Like sand, it is of no value in its pure state, but when mixed with other constituents it is most useful, and materially assists in the decomposition of animal manure.

Humus is not rotting rock, but rotting vegetation; in other words, it is plant refuse in a state of decay. Humus is conveyed to the soil from above, not from below; the deeper we go, the less there is. Annually, some portion of vegetable growth, leaves, sticks, and roots decay; this falls upon the surface of the soil, and the rain carries it below. Earth-worms assist in

mixing the humus with the soil. It is stated that fifty thousand earth-worms exist in an acre of agricultural land. Humus is ever changing, being reduced to water, carbonic acid gas, ammonia, etc., and these becoming plant foods are rendered available for growing plants. Humus is useful in sandy soil, because it arrests evaporation, and is equally necessary in clay soils, since it loosens the earth and by so doing assists aeration.

Texture of Soils.—This depends upon its ingredients. When we speak of soils being *heavy* or *light* we do not refer to their weight, but to their texture or degree of resistance offered to the spade when moved. In this respect sandy soils are the lightest to work, but in actual weight they are the heaviest. Sandy soil is the easiest to till, but it lacks the power of retaining water and the soluble parts of manure. Because of its looseness it soon becomes dry, and the goodness of the manure either evaporates or passes away with the water. For this reason such a soil, since it appears to eat up the manure, is called by Essex folk "hungry." Clay, on the other hand, whether wet or dry, is the most difficult soil to work, and the greatest care must be taken in tilling it; however loose and fine it may have become through the action of frost, if it is moved when wet, the fine particles quickly adhere one to another, forming again a solid mass.

Moisture in Soils.—The power of soil to absorb and retain moisture, apart from the effect of applied manure, depends upon the fineness of its subdivision. In dry weather plants require a soil which can quickly absorb the dew or brief summer shower, or draw up moisture

from below, and the soil which can do this is the best for plant life.

"Stiff clays, which take up the greatest quantity of water when it is poured upon them in a fluid form, are not the soils which absorb most moisture from the atmosphere in dry weather; they cake and present only a small surface to the air, and the vegetation on them is generally burnt up almost as readily as on sands. The soils that are most efficient in supplying the plant with water by atmospheric absorption, are those in which there is a due mixture of sand, finely divided clay, and carbonate of lime, with some animal or vegetable matter, and which are so loose and light as to be freely permeable to the atmosphere. With respect to this quality, carbonate of lime and vegetable matter are of great use in soils: they give absorbent power to the soil without likewise giving it tenacity. Sand, which also destroys tenacity, on the contrary, gives it little absorbent power." —Davey, "Lectures on Agriculture."

The following table, given by Dr. Fream,[1] affords much instruction on the water-holding power of soils:—

WATER-HOLDING POWER OF SOILS.

	Per Cent.
Quartz sand	25
Clay soil (60 per cent. clay)	40
Loam	51
Ploughed land	52
Heavy clay (80 per cent. clay)	61
Pure grey clay	70
Fine carbonate of lime	85
Garden mould	89
Humus	181
Fine carbonate of magnesia	256

[1] "Soils and their Properties." Dr. W. Fream.

From this table it will be seen that where the soil is naturally light and susceptible to drought, an application of something that will hold water is necessary. Humus would, of course, be the best, were it not that its effect is transitory. Clay is, however, most lasting. This should be broken up and layered about 2 feet to 18 inches below the surface. The roots of the rose will soon run down into it.

Fertility.—Soils consist of organic and mineral substances. Before a manure, especially an artificial manure, can be successfully used, we ought to know the constituents of the soil; for if the soil already possesses an abundant supply, say, of phosphates, it would not require manures that are essentially phosphatic. The inorganic portions of the soil consist chiefly of:—

Silica.	Potash.
Alumina.	Soda.
Calcic carbonate.	Ferric oxide.
Phosphoric acid.	Magnesia.
Sulphuric acid.	Chlorine.

If we knew exactly the proportion of each of these contained in the soil in which we propose to plant our roses, we should know better what artificial manure to apply; otherwise, it is more or less guess-work. It does not at all follow, because a brother rosarian finds a special manure helpful to his plants, that the same will be equally so to ours. For instance, some one may advise a liberal application of bone meal, a fertiliser supplying phosphoric acid; but suppose your land is already rich in available phosphates, then it follows that to apply

a dressing of bones would be like carrying coals to Newcastle.

Again, although a given soil may be both by nature and tilling in a high degree of fertility at a given time, nevertheless the continual cropping of the land with the same crops abstracts from it those minerals which are particularly required by the plant. The soil, therefore, loses its fertility unless the deficiency is supplied. This is why the farmer adopts the method called "the rotation of crops"; he grows on the same land a succession of crops that require phosphates, nitrogen, and potash in varying amount. For instance, wheat requires liberal supplies of nitrogen, turnips phosphates, potatoes potash. But the ordinary rose-grower cannot well adopt this system in his garden; he must, therefore, supply any deficiency of plant food by a liberal application of manure to restore the land to its primal fertility.

Water.—The fertility of the soil greatly depends on the amount of water that falls upon it. Water, as we have said before, is of little value in itself, especially pure water, but it is a messenger boy or carrier bringing food to the root-fibres of the plant both from above and below. Now the land may be so caked on the surface that the water runs off without penetrating it, or it may be prevented from rising because the soil is hard and caked below. That water rises as well as falls, and is a carrier of good things to the plant is not seldom overlooked, otherwise more care would be taken not to tread the soil into a cake when planting, for by so doing you are hindering the access of the carrier. As an illustration that water rises, take a flower-pot filled with dry

garden mould and stand it in a saucer of water; the surface of the soil will soon be moist and the saucer dry. Take another flower-pot, fill it with coarse soil in which there is an admixture of clay, press it firmly down and let it dry hard, then put it into a saucer of water. You will have to wait a long time before the surface becomes moist; much longer than in the case of the flower-pot containing the finer soil. Now what has happened, and why has it taken longer for the water to pass upward through the hard stiff soil? Observe, in each case the water has passed upwards; it has risen by capillary attraction. Myriads of minute spaces exist in the soil: the finer the soil the smaller the spaces. There is little or no capillary attraction in a hard, close soil. These two flower-pots give us a valuable object lesson on soil cultivation. The plant is stationary, it must be fed by water—by the messenger boy—and the value of the water lies not in what it is, but in what it conveys. Up and down the water is ever passing, bringing to each tiny rootlet the food it requires. If water does not feed the plant it will die, if it feeds it too much the plant will be sick. There is a limit even to the strongest digestion, and although the rose, pig-like, is a gross feeder, nevertheless it is possible to overfeed it, and that is why it is positively harmful to plant the rose in contact with strong manure.

Drainage.—Let us suppose we contemplate making a new rose-bed on some portion of pasture land. The first thing to consider is drainage; is it by nature well drained? If not, we must resort to artificial drainage. To settle this point, note the herbage; fine herbage denotes a well-

drained soil; but if, on the other hand, the grass is coarse and in tussocks, it is a sure sign that the land requires draining. There is little land in England naturally so dry as not to be susceptible of improvement by artificial draining. Land is not in a perfect condition unless the rain can penetrate to a depth below that of the root of a rose plant. We want the roots to go down; stagnant water checks this descent, because a water-logged soil destroys all capillarity, which means to the plant suffocation and starvation. It is well known that plants growing in a deep soil lying on a porous subsoil seldom or never suffer from drought, whilst the soil which soonest becomes saturated in wet weather is that which is the quickest to get dry and cracked in times of drought. We therefore drain the land to save the rose plants from being drowned in wet, or parched in dry weather.

But draining does more than this, it raises the temperature of the soil; and the higher the temperature of the soil the earlier and later the roses will bloom. Soils that are naturally dry are usually described as warm and early, and conversely, wet soils are invariably spoken of as cold and late. This classification is quite correct, and the explanation not far to seek. An excess of water in the soil keeps down its temperature in several ways. The water in passing into vapour draws off the heat which the soil has obtained from the sun. Water also has a high radiating power, but stagnant water conveys no heat downwards, for although the surface of the water is warmed it remains on the top, it never descends to carry the heat below. Now where the rain

water can penetrate to a depth of several feet, and can pass through to the drainage, it carries with it the heat it has acquired from the atmosphere together with the sun-heated surface of the soil. Therefore in well-drained land the messenger boy brings heat downwards as well as plant food.

We may not be able to choose our climate, it may be late or it may be early—there it is, we cannot improve it; but this we can do, if the soil be wet, and consequently cold, we can raise its temperature by artificial drainage, and thus insure a crop of autumn-flowering roses.

As will be presently noted roses require a deep soil in which to work, and the deeper it is the more room there is for storage of water; water passing up and down, not stagnant. I advocate that the soil in a new bed should be broken up to a depth of 3 feet, and therefore the drain should come just below. Of course if the soil is naturally light and porous to a considerable depth no artificial draining is necessary; if the subsoil is gravel or sand so much the better, provided we have 3 feet of good soil on the top. But where a heavy, impervious subsoil of clay takes the place of gravel, then a land drain 4 feet deep or more is most essential. I have dealt at some length on this point because in many cases where the rose crop is a failure it is due to neglect of draining.

Trenching.—Having grasped the lesson taught us by the flower-pot and put in a land drain, we may proceed to prepare our rose-bed. In the first place, there must be ample storage room below the plant; storage room

for water. This means that the ground should be dug deep. Sufficient attention is not always paid to this important point, nevertheless in a dry flowering season it makes a great difference to the rose, for if there is plenty of water below, no surface watering is required. The ground should be broken up to a depth of 3 feet or more; broken up, but not turned upside down, and when once the ground has in this manner been well stirred, it will last for some years. Now let us suppose that we are dealing with a piece of old pasture land, than which there is nothing better; that we are going to annex for the purpose of planting with roses.

We first open out a trench, say the whole width of the bed, the trench being 1 yard wide. The top spit is wheeled to the other end of the proposed bed, the second spit and the loose crumbs being likewise removed. We now have a trench about 2 feet deep. Then the subsoil at the bottom of the trench is pricked up with a fork as deeply as possible, the result being that the earth is stirred 3 feet deep. Another trench is commenced of exactly the same size as the first, and the earth from the second trench is turned into the empty one, keeping the subsoil below and the fibrous turves on the top of the subsoil at 8 inches to a foot below the surface—the turf is all the better for being chopped in two or three pieces. On this fibrous turf should be spread a layer of farmyard manure: if the width of the bed, for example, is 10 yards one good garden barrow-load to each trench will be sufficient. On the top of the manure place the fine mould that lies just under the turf, and fill up to the required level with crumbs. In the work of trenching keep the

subsoil below, but turn over the top soil. Repeat this process until the bed is completed.

When the digging is finished the earth will be in layers. First 8 inches of friable mould, then a layer of manure, next about 4 inches of chopped turf, then 1 foot of possibly mixed soil and subsoil, and finally 1 foot of broken-up subsoil. I say possibly soil and subsoil, but, of course, that depends on the depth of the soil lying upon the subsoil. Although the bed is now ready for planting, the ground should be left as it is for at least a month, or even longer unless a heavy fall of rain has ensued, in order that it may settle, for if the ground is too "lush"—that is, too loose—the plants will not tread in firmly. Some growers recommend a thorough mixing of the manure with the soil, but I do not advise this; we want the roots to go down towards the manure, and if they do not reach it at once the messenger boy will be certain, with the ground in this condition, to bring it up to them. If the manure is in the surface soil, surface roots will be formed, and where a plant depends on surface roots it is liable to suffer from the heat of the summer sun. Especially is this the case with hybrid perpetuals, and when we hear of amateurs complaining of the shortness of their rose season, one is inclined to think that shallow digging and surface dressing has something to do with it.

By this system of deep cultivation we have artificially increased the capillarity of the soil—it will hold more water; the winter rain will percolate into the bed as into a sponge, and the result is a great reserve of water, providing the plant with food

supply through a long period of spring and summer drought.

Tilling the Surface.—In this chapter we are dealing with the cultivation of the soil, and that alone; the method of planting roses will come later. We will suppose the piece of ground has been drained, trenched, and planted; the next thing is tilth. Tilling the surface is a most important detail in the art of good husbandry. The process of stirring the surface opens the soil, and renders it permeable to air and water, by which the inert materials contained therein, both organic and mineral, are converted into soluble plant food. Now it is evident that soils which contain a good deal of clay will not bear moving when the ground is wet, for instead of opening the soil and breaking it up into small particles, the reverse happens; the rain on freshly moved clay binds the particles once again into a solid mass. After the bed is planted, the fork, if used at all, should be employed lightly because roses cannot bear a loose soil at the roots, and to fork the bed deeply in the spring, just as the roses begin to break, will give them a check from which they will not recover until the end of summer. One is quite aware that several authorities advise that a mulch of manure should be spread over the bed in the autumn, and forked in in the spring; but I am not sure that this is good advice, and for two reasons: first, top-dressing enriches the surface and encourages surface roots, and as has already been pointed out these surface roots are detrimental to the plant, especially in a dry summer. In the second place, forking disturbs the roots. I would never consent to the bed being forked, except when the sur-

face, by treading up and down the rows, has become hard, and even then the fork is merely used for skimming the surface to a depth of 2 inches, just enough to loosen it for the hoe.

Hoeing, not forking, is the proper method of tilling the surface after the land has been cropped. The object of hoeing is not so much to keep the weeds down and the land clean as it is to stir, loosen, and pulverise the soil, and so to check evaporation. For the reason that the housekeeper wraps a block of ice in a blanket, so the good gardener in spring and summer is constantly hoeing. Deep and continuous hoeing is wonderfully effective in promoting growth, as any market gardener will tell you; it prevents the soil from reverting to its natural solidity, and by division and subdivision increases its power of capillarity. And here another important point should be noticed. If the bed has been prepared in the manner already described, and the surface to a depth of 2 or 3 inches is constantly stirred by the hoe, no watering is necessary, for the moisture in the soil as it rises is checked at the surface. It is recommended by some authorities that the beds should be mulched in the summer, with a slight top-dressing. I used to adopt this method, but not now; there is no necessity for a mulch if good hoeing is practised. But what is good hoeing? Well, there is as much art in hoeing as there is in ploughing. Watch a good hoer at work; he does not chop with a short stroke, but puts the hoe in the ground, bears upon it, and draws it through the soil, hardly disturbing the actual surface, and yet at the same time he leaves the soil looser than the man who chops;

in a word drawing, not hacking, is the proper method of using a hoe. The best kind of hoe is that made at the blacksmith's, a piece of an old scythe set in a holder; this blade when worn down can easily be replaced by another.

Where the roses are grown in rows a very useful implement will be found in the Planet JR. hoe (Fig. 2).

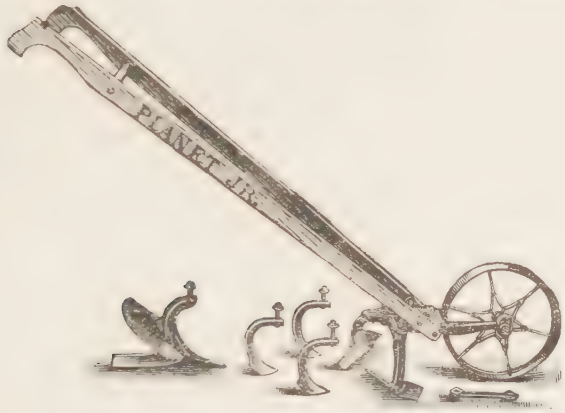

FIG. 2.—The Planet JR. Hoe.

It is a frame of two handles with a wheel in front. In this frame can be set either two hoe blades or three scarifiers or prongs, and it is pushed not drawn. With this implement a man will stir the soil up and down the rows almost as fast as he can walk, thrusting it forward by a series of short pushes. It is an invaluable time-saving implement, and does the work better than the ordinary hoe.

CHAPTER VIII

MANURES

1. The Requirements of the Rose. 2. The Composition of the Soil. 3. The Composition of the Manure. 4. Farmyard Dung. 5. Auxiliary Manures.

Following the cultivation of the soil comes the subject of manures. The term "manure" at one time was restricted to the excrement of animals, either alone or mixed with litter, but is now employed in a more comprehensive sense—to all substances, animal, vegetable, or mineral, which, either separately or in combination, are added to the soil in order to increase its productiveness, or to restore that natural fertility lost in cropping. Land remaining in its virgin state does not lose its fertility, for the vegetation which grows upon it is not removed, but in process of time returns again to the earth, the crop in its period of growth having gathered supplies from the atmosphere more than sufficient to recoup the soil for any loss it has sustained in producing vegetation.

But it is otherwise when the land comes under cultivation. Then nature is interfered with; a certain amount of vegetable growth in the shape of crops and weeds is annually removed, and for this the soil must be recouped in some form or another in order to restore its fertility.

Plant life as a whole derives its food from two sources,

the soil and the atmosphere—one-fourth from the soil and three-fourths (the carbon) from the atmosphere; and because the atmosphere contributes the larger share it is essential, especially to the rose, that it should be as pure as possible. This is why roses grown in the vicinity of large towns are seldom produced to perfection. Chemical analysis has demonstrated that a plant is composed of three substances, water, organic material, and mineral matter, the organic portions being combinations of carbon, hydrogen, oxygen, and nitrogen. The mineral portions of the plant are principally lime, magnesia, potash, soda, oxide of iron, phosphoric acid, chlorine, and silica, and to supplement the supply of these minerals recourse is had to manures.

In order, therefore, to apply manures intelligently and usefully, regard must be had to the following points, viz.:—

1. The need of the specific plant to be cultivated.
2. The condition of the soil, and its available plant food.
3. The composition of the manure.

1. The Requirements of the Rose

To ascertain the requirements of the rose we must first examine its composition: the substances and their proportions. The carbonaceous part of the rose, obtained from nature's great storehouse of all plant life, the atmosphere, is not now before us; that cannot be affected by manure. But what we desire to know is, what are those constituents of the rose which can be supplied by manures? and to know this the entire plant, roots, wood,

leaves, and flowers are collected and a chemical analysis made. A great authority on the ashes of various plants, Professor Wolff of Berlin, has given us the following exact analysis of the rose in its several parts of root, wood, leaves, and flowers, thereby showing that, whilst lime enters principally into the constitution of roots and wood, the plant is in a great measure indebted for its foliage and blossom to potash and phosphoric acid. This analysis is taken from an article on manure by Mr. E. Tonk, in *The Rosarian's Year-Book* for 1889:—

THE COMPOSITION OF THE ROSE (mineral matter only)

	Potash.	Soda.	Lime.	Magnesia.	Iron.	Phosphorus.	Sulphur.	Silica.	Chlorine.
	Per Cent.	Per Cent.	Per Cent.	Per Cent.	Per Cent.	Per Cent.	Per Cent.	Per Cent.	Per Cent.
Roots . . .	13·45	4·20	40·88	7·15	2·86	29·14	1·95	0·21	0·21
Wood . . .	14·25	2·57	51·50	7·62	4·23	10·62	2·22	4·35	2·78
Leaves . . .	33·13	1·47	31·29	9·23	2·49	11·68	4·31	5·71	0·89
Flowers . .	47·41	2·44	13·25	5·94	0·97	28·46	3·17	1·52	0·57

It, however, by no means follows that a requisite manure for the rose should be in the exact proportion to this analysis of the rose ash. The analysis gives us the inorganic component parts of the rose; it makes no allowance, which we ought to do when applying manure, for the composition of the soil in which the rose is growing. Neither does an analysis of the ash give us any information as to the proportion of nitrogenous constituents of the rose.

We are now led to the consideration of a principle in scientific husbandry known as "the law of minimum." Where a soil is deficient in but one of the five essential ingredients necessary for the plant, although rich in the other four, it may become more or less barren. That is to say, the fertility of the soil depends upon the small proportion of the one, not on the abundance of the four. Just as the strength of a chain lies in its weakest link, so the minimum of any one essential ingredient, not the maximum of the others, is the measure of the soil's fertility. In other words, "it is the body *in minimo* which rules the crop"; a most important principle. Nevertheless, the analysis of the rose ash gives us an approximate idea of the need of the rose.

2. The Composition of the Soil

Having indicated the need of the rose, the composition of the soil and its mineral properties next claim our consideration. The composition of the soil has already been dealt with, so we pass on to its minerals. In combination these consist of:—

Silica.	Potash.
Alumina.	Soda.
Lime.	Iron.
Phosphoric acid.	Magnesia.
Sulphuric acid.	Chlorine.

With the single exception of alumina, which occurs as a silicate, all of these, it will be noticed, are found in the rose ash; and it will be further noticed that the chief constituents in the composition of the rose are phosphoric acid, potash, and lime. Therefore the soil wherein these

substances are each in ample supply will be the best soil for the rose, providing that enough combined nitrogen is also present.

Phosphoric acid is present in all good soils: it exists in combination with lime, iron, and alumina, phosphate of lime being its common combination, clays more than others possessing it.

Potash is found in most soils that are of an adhesive texture, therefore sandy and peaty soils are generally deficient in it.

Lime is contained in abundance in marls and limestones, but of it clays and loams usually contain only from 1 to 3 per cent.

This is an indication of what most soils either possess or lack, and leads us to the consideration of our third point, viz. the composition of the manure for the soil in which we grow the rose.

3. The Composition of the Manure

To use any manure successfully it is necessary to understand its composition, and then consider whether in the soil to which we propose applying it there is likely to be a deficiency. Some people will tell you positively that such and such a manure is most efficacious. Doubtless it is, provided the soil needs it; but if, on the other hand, the soil already contains the ingredient in sufficient available quantity, then this particular manure is useless. In some instances the amateur rosarian, in his first attempt to use artificial manure, takes no thought of this. I speak from experience. In my early days of

rose cultivation I noticed that certain market gardeners sowed sometimes guano and sometimes soot in their fields. Wishing to be abreast of the times, and not stopping to consider the why and the wherefore, I applied a mixture of guano and soot to my roses. I fed them as I loved them, a good helping to each, and forked it in! The poor things, it made them sick; it almost burnt them up—there were no first prizes from that lot that year. So to any one tempted to apply artificial manure let me say, do not use it until you are aware of its composition, and whether your roses require it.

As has already been stated, the object of manuring is to replace in the soil those constituents abstracted from it by the crop.

Now one of the first things noticeable in any list of manures is the usefulness of farmyard dung. Whether it be long or short dung, whether the litter be straw or peat moss-litter is in more general use—dung has its place in bringing to the rose its principal requirements. Therefore let us commence our brief consideration of plant food with this the most useful of all manures.

Farmyard Dung

This must ever be regarded by the rosarian as his sheet anchor; if he would meet with any measure of success either in the garden or at exhibitions he cannot afford to do without it. And here let me observe in passing that, although it may be in most cases more easily obtained, stable dung for the rose does not equal nor can it be an efficient substitute for cow dung. But what is farmyard dung? It has a threefold composition: excrement of

cattle, litter, and the refuse of their fodder. Granted that the dung is in the best possible condition, nevertheless to assess it at its true value regard must be had to the animal, its food, and its litter. Cow dung may be less fertilising than horse dung, but being slower in action, it is more lasting, and it is cooler. For kitchen garden crops, which for the most part are all of comparatively quick growth, horse dung is the best; but for the rose, which is not an annual crop, and requires no forcing heat, cow dung is far superior. Even pig dung, although generally powerful, is better than horse dung, because it is more dense and is therefore more lasting.

A good farmyard manure will on the average be composed as follows:—

Water	1627	lbs. per ton.
Dry matter . . .	613	„ „ „

containing:—

Nitrogen . . .	17	lbs. per ton.
Phosphoric acid . .	9	„ „ „
Potash	13	„ „ „

As a general fertiliser for roses, farmyard dung is deficient in phosphoric acid, and it is as well to add either bone-meal, basic slag, or other phosphatic manure when making a new bed.

Better results are obtained by using both dung and artificials than by applications of either by themselves, and this is now generally acknowledged throughout the agricultural and horticultural world. Stable or farmyard manure may be used either in a comparatively fresh and littery state, known as "long," or after it has become fermented, when it is said to be "short." For use on heavy

land "long" manure is to be preferred, as it is not only more economical, but it also tends to keep the soil open and better aerated. On light land, for the opposite reason, "short" manure gives better results, as it helps to bind the soil, thus retaining moisture, and it also produces a better root-hold for the plants. Farmyard manure is therefore as important on account of its mechanical effect as for its actual manurial value in supplying food for the roses.

An excellent substitute for farmyard dung may be made from chicken manure and grass clippings, and, as many rose-growers have both chickens and a lawn, the following details may be found useful. Spread a layer of grass clippings to a depth of about 6 inches, and cover evenly with 2 inches of chicken manure. Continue this by adding alternate layers, and when the heap is at least four feet high, cover the whole with a good six inches of garden mould and beat it with the back of a spade. Allow the heap to remain untouched for about three or four months, by which time it will be ready for use.

Now the food of the animal has a great deal to do with the quality and composition of the manure. The richer the food the richer the dung: and therefore dung from a dairy farm, especially where the cows are kept continually stalled up, and fed with linseed or cotton cake, or indeed any other kind of artificial food, must naturally be richer than where the cows are grazing in the fields all day, and only brought up to the cow-house at milking time. Then again that manure must be more valuable where the litter used is a good absorbent of urine, and for this reason oat straw or barley straw is better than hard wheat straw, but moss-litter is the best of all. In

addition to being a first-rate absorbent, moss-litter contains at least 2 per cent. of nitrogen, whereas there is barely ¾ per cent. of nitrogen in wheat or barley straw. Of course, many of us have to be content with such dung as is made on the premises, but should you have to buy it, then the price should depend, as already pointed out, on the animal, fodder, and litter.

But let it be the very best obtainable. Even then it is not, and never can be, a perfect, a complete manure for the rose garden; it is deficient in several essentials, and a moment's consideration will prove the truth of this statement. For instance, suppose we are going to manure farm land. In applying dung we are returning to the land some, but not all, the constituents of the crops, be they what they may. The land has produced grain and straw; the grain has been sold—that will not come back, but only the straw. Or the animal has assimilated the crop; if a cow, then the milk has been consumed, or the animal has grown or otherwise increased in bone, flesh, and blood. So it comes to this, that after deducting grain, dairy produce, and butcher's meat, only the residuum is given back to the land in the substance of the dung, and we must therefore resort to artificial manures to compensate for what has been extracted. And not only is there loss by animal abstraction, but there is also a certain amount of waste in the manure during the process of decay both from gaseous exhalation and liquid drainage.

And there is a further point to be taken into account: just as the composition of farmyard dung is variable by reason of the quality of the food, fodder, and litter, so does its effectiveness vary with age. In its

fresh state—"green," we call it—farmyard dung possesses only a small amount of nitrogen in a soluble condition. Being insoluble, the plant cannot absorb it, and we must wait until what is termed nitrification has set in, or, in other words, we must wait until it is rotten. Nitrification is the change produced on the excreta, fodder, and litter by the action of certain soil bacilli. In the process of decomposition care must be taken, otherwise the dung, even the very best, will be rendered almost worthless. The dung should be clamped in order to produce heat; but the heat in the centre of the clamp should never rise above 150° F. or there will be a loss of valuable ammonia. For instance, we may have had a heap of stable dung, which, although at one time hot and smoking, yet when we came to use the manure, it appeared to be nothing more than a heap of light, dry straw refuse. It has become "fire fanged" through overheating: for if a clamp of dung sends forth strong effluvia, it is a sure sign that much wasteful fermentation is in process, and must be checked. This should be done either by watering it or by an application of liquid manure. To be in good condition suitable for the rose garden with a light soil, farmyard dung should be neither fresh nor old, but heavy to handle, greasy and adhesive: and dung from cake-fed animals will be like this if properly made.

But it may be asked, is farmyard dung worth all this trouble to make or get, seeing that after all it contains only about 40 lbs. of fertilising ingredients per ton? These ingredients are valuable, for they are phosphoric acid, potash, and nitrogen, so essential to plant life. If,

however, the value of farmyard dung lay in these fertilising products alone, then indeed the expense of making and applying it would be out of all proportion to the result. But it has other qualifications as well; it warms the soil and assists in retaining moisture; and warmth and moisture, as we have observed in a previous chapter, are most essential to plant life. Moreover, it lightens the soil, thereby assisting ventilation. Therefore, a dressing of farmyard manure, however deficient it may be in manurial value, is of considerable benefit to the soil, and should form the basis of all manuring.

It has been demonstrated that farmyard dung is not by itself a complete or perfect manure for the rose garden. What, then, is required? The answer is, auxiliary manures —artificial fertilisers.

Auxiliary Manures

These act in various ways:—

(1) As *direct* plant foods, supplying the crop with phosphoric acid, potash, nitric acid, &c.

(2) As *indirect* plant foods, such as lime, causing various chemical changes in the inert constituents of the soil.

(3) As improving the texture of the land.

As to the best time of the year to apply them, we have to consider whether they are soluble, partially soluble, or insoluble; or, to put it another way, whether they are quick-acting, acting slowly, or acting only when in combination with others. A soluble manure, such as nitrate of soda, should be given when the plant has commenced to shoot; partially soluble manure, such as

guano, just before the commencement of the growing season: insoluble manure—a dressing of bones, for instance—in the previous autumn.

The principal requirements of the rose are, as has been shown above, phosphoric acid, potash, lime, and nitrogen. In what form they may best be given should now be considered. To supply phosphoric acid, one of the most useful auxiliaries is bone manure.

Bone manure (unsteamed) owes its fertilising power primarily to the phosphoric acid, and secondarily, to the nitrogenous matter which it contains. Bones may be used in the raw state, under the name of crushed bones, reduced by bone-grinding works to one-inch bones, half-inch bones, bone dust, or meal. The coarser the bones, the longer they last and the slower they act. Bones effect an almost permanent improvement on the land, the one-inch bones lasting seven years at the least; but as they are less speedy in action than bone-meal, they should be applied when planting. Bones of good quality should contain 45 per cent. of phosphate and 4 per cent. of nitrogen. Another method of preparing bone manure, and to be used as a top-dressing, is to subject them to the action of sulphuric acid. Treated thus, it then is known as dissolved bones—a partially soluble manure to be applied as a top-dressing in the spring, and hoed in if the weather is dry.

Basic Slag is another valuable auxiliary for contributing phosphoric acid. Basic slag is a product obtained during the conversion of cast-iron into steel by the "basic" process. A very fine, almost impalpable powder, it may be applied at the rate of 2 or 3 ozs. per sq. yard; it is very heavy,

and therefore only equals in bulk about half the same quantity of crushed bones. We have used it annually for many years, dusting it in the trenches when planting dwarf stocks; but now and again, by way of a change, bones have been used instead. It is easily dissolved by the weak acids of the plant roots, and we think it helps the stocks to become established in readiness for budding. Good basic slag should contain 18 to 26 per cent. of phosphoric acid, and at least 80 per cent. should pass through a sieve of 10,000 meshes to the square inch.

The next essential mineral constituent is potash. Every plant requires a certain amount for its proper development, since upon its presence in the soil depends to a great extent the formation of chlorophyll. Potash is indispensable for the formation of starch in the foliage, and where it is deficient the plant is more liable to attack by vegetable and animal parasites. Clay soils usually contain sufficient potash, but in sandy and light soils the supply is poor. Potash occurs in farmyard dung and urine, and it is, therefore, important in the making of the dung to preserve the urine. Note also that wood ashes, leaves, and burnt earth are all contributors of potash, the wood ash yielding 10 per cent.

Burnt Earth is within the reach of every one, and a good supply should always be at hand. Apart from any manurial value, it is invaluable for sprinkling among the roots, especially when at the time of planting the soil has a tendency to become wet and heavy, for friable earth of some sort should always lie close around the roots. When we speak of burnt earth we do not mean that

hard red substance called "ballast," or baked clay, but friable black earth—it may be red when the fire has been fierce—burnt to a powder. To burn a heap of earth properly requires a little care and attention; those who know will, I hope, pardon a few details. Lay a good foundation of straw, twigs, and several logs of wood —stumps of trees split up are useful. After lighting wait until the fire has obtained a good hold of the logs, and then begin by degrees to cover it with dry mould or turf, roots, weeds, and leaf refuse, but do not hurry on the earth or it will put out the fire. After awhile when much heat is engendered completely cover the heap with a layer of earth. And here lies the difficulty; a slow smothered combustion is necessary if the earth is to be burnt to a friable ash, for a fierce fire causes the earth, especially if it is clayey, to bake hard and lumpy. Therefore we must never allow the fire to break through, and so wherever there are fissures and smoke is given out they must at once be covered, for if this is not attended to the fire will soon burn out. As the earth on the top dries rake it down the sides, applying fresh soil in its place, and keeping the heap cone-shaped. The heap should appear to be heating rather than burning, for if a smell arises it is a sure indication of mischief—the heap requires recoating. Little by little, if this method is followed, the heap will gradually increase in size until all has been laid on. A heap well banked up will last for twenty-four hours without further trouble, but it is best looked at night and morning. With attention the heap, once the interior is hot, will continue in this state of smothered combustion for a week or

more—the longer the better. It is needless to say that this process should be carried out in the summer.

A mixture of brewer's grains and burnt earth and applied as a surface dressing in November, as Mr. Rivers points out, is good. The grains should first be fermented in a heap for two or three weeks, and then mixed as follows: three-fourths grains to one-fourth earth; they both contribute potash. A mixture of malt dust and horse droppings fermented and applied in the same way is likewise good; it may also serve as a mulch.

Lime.—The function of lime is to build up the tissues of the plant, but unless used very sparingly it will do more harm than good. Being an indirect plant food it acts upon other ingredients, and if too strongly applied will soon exhaust the soil. Lime plays an important part in the process of nitrification by hastening the decomposition of organic matter; it also improves the condition of some soils, especially heavy clays. Most soils, however, contain calcareous matter, and where bone or basic slag is used no direct application of lime will be found necessary.

Nitrogen.—We now come to a most important element in rose cultivation, without which all other things are useless; "without nitrogen, no growth." Nothing so much affects the fertility of the soil as nitrogen when supplied in a form by which it can be assimilated, and nothing can be more readily abstracted either by the plant itself or by drainage. Nitrogen is an element not only of the air, but it enters into the composition of root, leaves, and wood, and therefore nitrogenous manures are indispensable to the rose-grower who seeks strong

healthy plants. Ordinary farmyard dung does not yield an efficient supply of nitrogen, so that we must seek it elsewhere. It may be found in animal products—in blood manures, for instance—of which more hereafter, but the chief factors in its supply are nitrate of soda and sulphate of ammonia.

Nitrate of soda is a salt obtained from Peru, where there are extensive deposits, and which is called by the natives *terra salitrosa*. Being very soluble it is quick-acting, so that unless it is given at the time when the plant is ready to receive it, it will be largely wasted. Unlike bones or farmyard manure, it should be applied in fractional top-dressings, given only during the growing season. A little dusting or sprinkling about once in two or three weeks, from the time when the plants begin to break until the first buds are opening, is all that is required, care being taken that it does not rest on the foliage, otherwise it will burn both leaves and tender shoots. For this reason it is best applied in dry weather, and slightly raked or hoed in. Nitrate of soda is a direct plant food, and comes into action immediately. If added too liberally it causes plants to produce a sappy growth and too much foliage. On heavy land nitrate of soda injures the tilth. In order to correct this defect, it may be mixed with an equal quantity of sulphate of ammonia, but this should be done immediately before use.

Nitrolim and *nitrate of lime* are nitrogenous fertilisers which have recently been introduced. Both are prepared by fixation of atmospheric nitrogen, and are similar to nitrate of soda in their action.

Sulphate of ammonia, a by-product obtained in the manufacture of gas, is another form in which nitrogen may be given. It is useful for clay lands, or where the

soils are not derived from chalk or limestone, but is unsuitable for soils containing more than 10 per cent. of carbonate of lime.

Both nitrate of soda and sulphate of ammonia tend to exhaust the soil unless a constant supply of other manures is maintained. It is essential to remember this, and also that, since nitrogen promotes principally the growth of roots, wood, and foliage, an overdose of these two fertilisers will cause the rose to expend its energies on wood and leaves at the expense of flowers.

Blood manures in various conditions furnish another source of nitrogen. If you have a butcher near at hand, arrange with him to take some of the blood and refuse from the slaughter-house; provide a heap of long dung in some handy spot, but obviously remote from the dwelling-house, into which the refuse and blood should be deposited as often as the butcher finds convenient, where it should remain undisturbed for two or three months. This manure is very strong and should be mixed with other dung before using, and be put in the bed before planting, treating it as other farmyard dung. In its natural state bullock's blood contains only 3 per cent. of nitrogen, but when dried it yields about 13 per cent., so that a butcher's heap is all the better for keeping. In addition to nitrogen dried blood supplies a little potash and phosphoric acid, and forms an excellent dressing for sandy and loamy soils. But do not give it too strong or the plants will run to wood and foliage.

Soot applied as a surface dressing during the growing season is beneficial, especially to Tea-scented Roses. It is

thought to give brilliancy to the flowers; it certainly improves the foliage. Some use it as soot water putting a peck or so in a piece of old sacking, and leaving it to soak in a tub of water. Soot water should be of the colour of very pale coffee when used. But where soot is employed in this way, the supply at a given time is limited, and cannot adequately meet the case where there are many plants to feed. It is, however, a good method of using soot in pot culture.

Liquid Manure.—As soon as the bud has formed, plant food may be usefully administered in the form of liquid manure. But bear in mind that liquid manure is given, not for the purpose of contributing moisture, but because by this means the manure is at once carried to the roots. For if a period of dry weather sets in, which is likely to happen about this time, a top-dressing of manure used dry will remain a top-dressing, and will not reach the roots. Liquid manure should never be given when the soil is dry or the plants thirsty. If such is the case a copious supply of soft water should first be given, preferably from a pond where the water has been warmed by the temperature of the atmosphere, and then the liquid manure will not be injurious. Liquid manure may be derived from the drainage of the farmyard or stable, and given neat, or, better still, diluted according to its strength. One or two repeated doses, if diluted, will be better than one strong dose. Where a pond is handy, or any rain water in proximity to the bed, a brew of liquid manure can be made by putting a few forkfuls of short dung fresh from the stable or farmyard into a tub, which should be filled with soft water and

then stirred; it is all the better for standing a few hours, but can be used at once.

Green Manures.—In the case of roses grown in a field apart from the garden the continual cropping of the land will tend to exhaust it, no matter how amply it may be dressed with manure. Where possible—it can hardly be so in the flower garden—the ground will be improved by a twelve months' rest; but it should never lie fallow—allow it to grow something. I would advise that it be sown with white clover, tares, or something similar, and when the crop is almost matured, fork it in; it will be found an excellent restorative. These leguminous green manures are nitrogen gatherers, both from soil and atmosphere, and they tend besides to warm the soil. When dug in, carbonic acid is formed by decay of the crop, and this acting upon some of the minerals renders them soluble. If you select tares, keep an eye on pigeons, both wild and domestic; they are very fond of tares, and once they find them out, they will have them nearly all.

From the foregoing remarks it will be gathered that plant food may be applied in two ways, either by placing it below the roots of the plant, or by surface dressing. Naturally, the greater part of plant food should be below; placed there at or before the time of planting, or else by digging out a trench the depth of a spade, inserting some 3 or 4 inches of dung and bones or basic slag, and replacing the removed soil. Of course this method takes for granted that the roses are grown in rows. It meets with much success where a piece of ground is planted with standard Teas. Standards usually remain for some

time where they are planted— I am not prepared to advise their triennial removal as has been suggested.

A top-dressing of dung in autumn is not recommended. One is aware that many of the rose guides and some trade catalogues do recommend it; but I cannot agree, for where the food is, there the roots will go. Farmyard dung should always be below. A spell of drought in the blooming season will prove this to be the correct method, for the roots running down after the manure will be unaffected by the drought above, especially if the hoe is kept going. If you are satisfied with a short season give your beds a top-dressing of dung; if you want a long season, don't.

Artificial Compounds.—Some amateur rosarians will doubtless prefer to use a mixture of ingredients without reference to the composition of the soil. These mixtures certainly are cleaner to handle and less odoriferous than soot or butcher's refuse, and they have this distinct advantage, they usually contain all that is necessary as auxiliaries to farmyard dung. But the effectiveness of artificial compounds depends greatly on the "law of minimum" already referred to, so that what may suit one rose garden may not suit another. Compounds of this description are many, of which Clay's Fertiliser and Clay's Invigorator can be recommended. The fertiliser should be applied as a top-dressing in April and hoed in; it can also be used as a liquid manure.

Should the amateur prefer to mix his own compound, he might adopt that recommended by Mr. C. Tonk in *The Rosarian's Year-Book* for 1889 wherein, after propounding the question, "What artificial manure is suitable

for the rose ?" he proceeds to give the following prescription:—

Superphosphate of lime . . .	12 parts.
Nitrate of potash	10 „
Sulphate of magnesia	2 „
Sulphate of iron	1 „
Sulphate of lime	8 „

In conclusion, may I repeat that farmyard dung should form for the rose the basis of all manuring. All other manures should be regarded as so many auxiliaries, each having its own special function for particular soils and occasions. Therefore, whilst relying annually on farmyard dung and some such phosphate as bones or basic slag, it would be a good plan in a top-dressing year by year to vary these auxiliaries. Otherwise the soil, although rich in some ingredients, may cease to be fertile through "the law of minimum."

CHAPTER IX

PLANTING

I. Situation. II. Selection: (*a*) Time of Ordering; (*b*) Treatment on Arrival. III. Time of Planting: (*a*) Condition of the Plant; (*b*) Texture and Condition of the Soil; (*c*) Temperature of the Soil. IV. Planting Dwarfs: (*a*) In a Rosarium; (*b*) On Lawns; (*c*) Singly or in Borders. V. Planting Standards. VI. Labelling and Registration. VII. Protection.

PLANTING roses now claims attention, and a most important part of rose cultivation it is, more so than many people appear to realise, judging from the way plants in the process are often treated. Over and over again instances are seen where, after ordering suitable varieties from the nurseryman, and plants have been sent in good condition, the roses turn out unsatisfactorily, and the sender has to bear the blame; whereas the fault really lies in bad planting.

The subject embraces not only the method of planting, but also the situation of the bed and the time to plant; all of which should be carefully considered if our efforts are to meet with success and time and money be not wasted. It is impossible to pay too much attention to details, since a rose carelessly planted will never flourish as it ought, notwithstanding all the after care it may receive.

Before ordering our roses the question will be, "Where shall we grow them?" And many will reply

at once. "In the garden, of course; we have no choice, the rose must go there or nowhere." But suppose yours is a garden which admits of a choice of aspect; or suppose you contemplate the enlargement of the garden by taking in a piece of the field—what then? When this is the case the point requires some consideration, does it not? Therefore if you have a choice, if you can go where you like, the first point to be determined is

I. Situation

Some people have an idea that roses will grow almost anywhere, and so they may if they are hardy sorts; but even the most robust will be all the better if planted in a place that suits them. Now roses are very sensitive to cold, heat, wind, and close confinement. A cold north-easterly wind in early June will, if it gets at them, destroy the promise of April and May, the first crop of flowers coming rough, green centred, or otherwise malformed. Again, a strong wind the day before a show, or the rose garden party, will play such havoc with the blooms that hardly one perfect rose can be found.

Therefore, in selecting a situation for the roses we should, if possible, choose ground that falls slightly towards the south or south-west, since the least inclination of the land in that direction will effect considerable protection from the north or north-east winds, the latter being the worst, because it is usually more laden with moisture. In sloping ground the wind touches the highest part, and passes over level, so that the plants situated under the hill escape the strong blast. As an

instance of wind direction, observe the movement of long grass in a meadow possessing even a gentle slope as the wind sweeps across the field, and see how protected is the grass half-way down the slope. And what is true of a field is also true of a garden: a garden with a southern aspect just below the crown of a hill is invariably earlier than another in the same neighbourhood which slopes in the opposite direction. Therefore we should, if possible, select a situation for the roses where the land slopes however slightly towards the south or south-west.

Roses are particularly grateful to the shelter afforded by tall trees. The late spring frosts are intensified by cold north-easterly winds, which frequently prevail at this period: they are especially injurious after the buds are formed, and although we cannot wholly escape them, we can at least mitigate their severity by choosing a spot for the roses where high trees will break the force of these winds. And, if you can, select a position equally protected from the south-westerly gales which the experienced amateur will admit often occur on some days during the blooming season. Roses dislike wind at all times but a hot dry wind when the flowers are in their beauty is particularly harassing; not only will the blooms be battered—we might obviate that by tying them down—but if not absolutely bruised, the hot air blowing upon them will cause the young flowers after cutting to shrink rather than expand; and no variety feels this more than Alfred K. Williams. Therefore look out for protection from the hot winds of summer.

If yours is an open situation it would be advisable to

plant a hedge. A beech hedge is good because the beech retains its leaves in the brown state for some time. Likewise a hedge of *multiflora* roses is recommended, since the species *simplex*, together with some of the hybrids, retain their foliage green until it is pushed off by the new growth in spring, and are therefore almost evergreen. Or a hedge of any other strong-growing rose, Reine Olga de Wurtemburg, Madame Alfred Carrière, or a Penzance Brier, for instance, would similarly serve to break the wind.

But a word of caution. Although tall trees are the best protectors from wind, there is this disadvantage; if near the bed their roots will soon be in it, and then, especially if ash, with its crowd of small fibrous roots, good-bye to the roses. Nor should roses be planted too near to hedgerows. And so here comes the difficulty; roses like an open space admitting plenty of air and sunshine, yet at the same time they must have shelter; if planted too near large trees, laurels, or other shrubs, the rose will be robbed of moisture; if planted in the open it is exposed to wind frosts. With the exception of strong-growing species and hybrids of such kinds as *sempervirens*, never plant roses near a shrubbery, or a border of laurel, privet, or indeed near anything of rooty, fibrous habit. They may exist, but they are not really at home even in a herbaceous border; they like to be by themselves.

And as to shade. Well, roses like shade from the afternoon but not from the early morning sun. It is very convenient, when growing for exhibition, to have the long shadows from distant trees come creeping over the bed about half-past four in the afternoon, because as

soon as the roses are shaded we can commence cutting for the next day's show. But more of this hereafter.

And now to summarise these remarks. The best situation for a rose garden is land tilted towards the south or south-west, with tall trees in the distance on the north-east; the next best position is a level, open spot, surrounded on all sides but the south with a rose or beech hedge; the worst site is a northern slope with trees and a hedge in close proximity.

Having decided upon the site, the next thing is to choose the roses. This brings us to our second point.

II. Selection

Selecting roses is by no means a simple matter. As a rule the more inexperienced the amateur, the more rash he is in his selection. He has perhaps just made up his mind to grow roses. He goes to a rose show, sees a fine specimen bloom, possibly one that has obtained a silver medal as the best rose in the show; attracted by the colour or size he at once decides to grow it, quite regardless of its habit or constitution. Now, that flower may be what is technically termed "a catch bloom," that is, a flower of a very uncertain, shy, blooming variety; or one that can only be brought to this perfection when grown on a maiden or yearling plant; or has been cultivated under a shade or in paper; or a variety that yields but one crop of flowers annually and for the remainder of the year the plant is flowerless. Now, of what use is such a rose as that to the man who wants roses for the garden?

But possibly the amateur may be quite aware of the

risk attached to selecting his kinds from the serried ranks of wired-up and dressed-out specimens in the exhibition boxes, and he turns his attention to the roses exhibited in bunches, "garden roses" as they are called. Here again there are many traps to catch the unwary, and will be unless the number of stems to a bunch is limited. Our amateur sees a large and doubtless very beautiful bunch of some decorative variety, but what he fails to notice is the great number of sprays cut to form the bunch. He may likewise, unless he carefully studies a catalogue, overlook the fact that the bunch on which he set his mind is of a rampant growing, summer-flowering rose, which would be quite out of place on lawns or beds. Roses suitable for bedding purposes should possess three principal qualifications: they should be hardy, dwarf or moderately so, and free-flowering, giving a constant succession of flowers from early summer until late in autumn. Therefore to all beginners I would say, state your requirements to a friend who is an expert, and leave the selection to him, or else visit the rose grounds of some leading nurseryman, and see them growing.

(*a*) *Time of Ordering.*—Order in the height of the rose season. Visit a nursery, an amateur's rose garden, or a rose exhibition, make notes of what you would like to get; compile your list with regard to the capacity of your garden, and despatch the order at once. While the rose fever is at its maximum is the best time to order roses; do not delay until the autumn, or you may have cooled down—at least this is my experience. By sending the order early you will probably obtain better plants, and also be more likely to get what you want; you can

always add to your first order later on. It is the usual practice of the trade to execute orders in the order in which they are received—first come first served: thus by ordering early is insured early autumn delivery.

(*b*) *Treatment of Plants on Arrival.*—On the arrival of the plants the bundle should be carefully unpacked, and the roses "laid in by the heels." To do this dig a trench in some more or less protected spot, say in the kitchen garden, and lay in the plants side by side, the removed earth from the trench forming a back on which they may slightly lean. If there are more roses than will fill the first trench or indeed in any case, dig another trench parallel to the first, and turn the earth as it is taken out into the first trench, covering the roots of the roses already laid in. See that the soil covers the roots both back and front, so that they do not lie hollow, tread slightly, and repeat the process as often as there are plants to lay in. Here the roses will remain without injury until required for planting even if planting is deferred for some weeks. Should the bundle arrive during a hard frost take it into the potting-shed and leave it there for a few days just as it is. It would, however, not be advisable to leave the bundle unpacked much longer than a week, for the sooner the plants are in the ground the better. In the process of unpacking see that the roots do not become dry, and if they do, dip both roots and wood in a tub of water before laying them in the trench. Some trade growers invariably dip the roots in clay puddle before despatching them to their destination. This coating of clay effectually prevents the roots from becoming dry, and therefore when this is

done dipping in water on arrival is unnecessary. It sometimes happens, when the roses are sent early, before the wood has quite ripened and the leaves fallen, or when the plants have been long in transit, or when carelessly packed, that the bark of the wood is found on arrival to be shrivelled. Where this is the case the plants should be placed in a tub of water deep enough to cover both roots and wood, and left there for a few hours before laying them in the trench. Some authorities recommend that the whole plant should be buried in the soil a few inches deep, and well watered, when they will soon plump up again.

III. Time of Planting

The time of year most favourable for planting depends upon these conditions, viz.: (*a*) the condition of the plant; (*b*) the texture and condition of the soil; and (*c*) the temperature of the ground.

(*a*) *The Condition of the Plant.*—Lifting and replanting checks growth, and therefore transplanting, unless it can be done quickly, should not be carried out when the rose is in full vigour. Sometimes and under certain circumstances we can remove a plant in full bloom from one part of the garden to the other; but it is a risky proceeding, requiring great care and much after-attention. If a rose is transplanted whilst in full growth, the sudden stoppage of sap supply will cause the wood to shrivel, and copious watering will be required before it will again plump up. And it is not only that the sap is checked, but leaves, being the lungs of the plant, if they are left on, the moisture in the plant will speedily

evaporate unless the foliage is watered as well as the roots.

A rose to be in good condition for removal should be in an advanced stage of ripening; the signs of ripening being when the leaves at the base have been shed, and the wood and prickles hard. It is not advisable to transplant a rose until the leaves have fallen naturally, or have at least been stripped off by hand. The rose is in the best condition to plant when it is at rest; during the sleeping period a period which begins in September and ends in March, the greatest depth of its inactivity being from November to the end of January. Although said to be sleeping the rose is nevertheless alive and where life is there must be a certain amount of activity; a rose never stops growing altogether. This being the case our aim should be so to time the planting that the rose has as long a period as possible in which to establish itself before nature calls upon it to awake, and therefore we should plant it as soon as possible after sleep has ensued. In other words, the rose will be in the best condition to plant during the months of October and November, the beginning of October if the ripening season is an early one.

(b) *The Condition and Texture of the Soil.*—This is the next consideration. The rose may be fit but the soil may not, and successful planting depends greatly on the condition of the soil, as much if not more so than on the condition of the rose. In the process of planting our chief care should be to pack the earth around and among the roots as closely and as firmly as possible. Firm rose planting engenders growth loose planting

hinders it, and, as has already been stated, the smaller the particles of earth, the easier it is for the plant to obtain supplies of food. We, therefore, require the soil to be in such a condition that it may fall closely among the roots and be trodden firmly about the plant, without losing its friableness; but this cannot be done when the soil is wet, especially heavy soil. Treading a clayey, wet soil causes the particles to adhere to one another, becoming a solid lump; and a rose planted when the soil is in this condition will never thrive.

From this it is evident that the land is in the best condition for planting either in the autumn before the sun loses its power to dry it, or in the early spring whilst the ground is fairly moist and the sun's power is increasing; in the depth of winter, the sun has little power, and especially for some time after a frost the soil is adhesive and heavy. We, therefore, arrive at this conclusion: that the soil is in the best texture or condition to receive the plants either in the autumn or spring, and is at its worst during the winter.

(*c*) *The Temperature of the Soil.*—This is our third point. To the newly planted rose, a warm soil promotes growth and consequent speedy establishment, whereas a cold soil means inactivity; and therefore we ought to plant whilst the ground is warm. Now, it is obvious that the soil will be of a higher temperature in autumn than in winter, and is warmer in autumn than in the corresponding months of spring; that is to say, the temperature of the soil will be higher in October and November than in February and March. And there is also this point to be considered; it is essential that during the winter as

much warmth as possible should be preserved in the soil. Now, it sometimes happens that a sudden cold snap is experienced in October, and we certainly get hard frosts in most Novembers. When this is the case, all planting operations should cease for a while. Never be tempted to plant when the crust of the bed is frozen, or when there is snow on the ground, however slight the fall may be: because, be as careful as you may, some of the frozen earth or particles of snow will be certain to get in the hole or trench, and being buried, will remain in its frozen state for some time, chilling the surrounding earth, and thus lowering its temperature. For this reason all digging operations should be suspended in frosty weather, whether the ground is required for immediate or for spring planting.

From these considerations we can see that October and November are the best months for planting, because the rose is then in the best condition. It will also have time to establish itself before spring awakens it; the earth is then more friable, and above all the soil is warmer.

Failing these months roses may be planted during the first fortnight of December provided winter has not set in, but if unable to plant before Christmas, defer it until February when the sun begins once more to exert its influence. Nothing is gained by planting in January, even if the weather is open, for, as has already been said, the temperature of the soil is then very low, and an unestablished plant feels the frost acutely. But frosts or no frosts, roses planted in February or March will give better results than when planted in the depths of

winter. Roses may be planted as late as April or even May; but they will need special care lest they suffer from drought, and we must not expect to see good blooms until the autumn.

IV. Planting Dwarfs

This part of our subject may be taken under the heads, viz.: Planting (*a*) in a rosarium; (*b*) in separate beds or on lawns; and (*c*) single plants.

(*a*) *Planting in a Rosarium.*—Where space admits of it we may lay out a rosary. The primary idea of a rosarium is not so much the consideration of individual flowers or plants, but general colour effect by grouping, something on the lines of "bedding out"; each bed containing only one variety, chosen with special reference to colour, the beds being comparatively small, so that when seen from a distance they appear as masses of colour bordered by narrow lines of turf or gravel paths. The effect of such a rosarium is greatly enhanced if it can be laid out in terraces, or below a terrace wall where the whole can be looked down upon. Charming as the effect may be, this method nevertheless does not altogether commend itself to real rose lovers even if its formality be broken by the introduction of standard and pillar roses, nor for the generality of rose-growers is space in a garden available for such.

(*b*) *Planting in Separate Beds or on Lawns.*—Under this heading comes the plot of ground in the kitchen garden, a bed or beds on the lawn, or a piece taken in from the field. As far as possible make the beds rectangular; long strips about 6 feet wide with a 2 feet space of

turf running between the strips is very suitable. Curved or geometrical beds should be avoided. They only add to the labour of mowing, for unlike the geranium, one is glad to say, the rose plant is irregular in outline, and consequently the effect of the curve, artistic or otherwise, is generally lost. I would advise one large bed rather than several small ones: you will have just as good an effect and with but one quarter of the labour, especially if the roses are planted in rows. Nothing is lost, but much is gained by planting in rows, because when the roses are in rows the soil is tilled more expeditiously either by the ordinary or the Planet hoe, and there can be no fear of a stiff formality by this arrangement, especially if the plants are placed close together in the row, closer than we should be able to do if dotted irregularly about the bed. The majority of roses used for massing do not make long growth. Take Fabvier as an example, a red dwarf-growing China, an old variety, but still one of the best; plants of this and others of a similar habit may well be placed, without fear of overcrowding, 1 foot apart, since even after the second growth has been made the plants will only just touch one another. The 12-inch distance between plant and plant will admit of the hoe being drawn between them, and as there will be a sufficient space between each row, air and sunshine will have free access. My advice, therefore, is this: make the beds rectangular, length and width varying according to circumstances, plant the roses in rows across the bed, rows 2 to 3 feet and plants 1 foot apart.

For example, a bed for dwarf Polyanthas, dwarf-

growing Hybrid Teas, such as Marquise de Salisbury or Liberty, Chinas, like Madame E. Resal or Leonie Lamesch, might well be made in the lawns, and planted according to the following dimensions, viz. :—

Length in feet.	Width in feet.	Rows across.	Plants in a row.	Total plants.
20	6	10	6	60

In this case only a 2-feet space is reckoned between the rows, but if stronger growing varieties are selected, such as Gustave Regis or Clara Watson, the space between the rows should then be $2\frac{1}{2}$ feet.

As an instance of what is suggested, the following may be useful. We have recently planted on the lawn thus :—

Length in feet.	Width in feet.	Rows across.	Plants in a row.	Total plants.
33	12	14	10	140

This bed has been planted with Chinas and Hybrid Bourbons of the following varieties, two rows of each : Blush Monthly, Fellenberg, Mrs. Bosanquet, Hermosa, Laurette Messimy, Ducher and Jean Bach Sisley. It is only given as an example, it must not be taken as a list of the best roses for the purpose ; they were chosen as supplementary to other decorative roses already under cultivation, and, for the most part, with a view to late autumn flowering. Lists of roses recommended for bedding and other purposes will be found in the appendix.

Planting the Bed.—We will suppose that the plants ordered have arrived, laid in awaiting their final destination, and that the bed has been made as described in

Chapter VII. Now, if the roses are to be set in rows the first thing to be done is to space out the bed by placing short sticks at each end of the intended rows. The roses should then be lifted from the spot where they were laid in; but from the time that they are so lifted until the trench in the bed is quite ready to receive them, the roots must be kept moist. Keep them covered with sacking or a mat of some sort; if the distance we have to take the plants is far, it is better to convey them in a barrow as a protection against sun and air. Upon arrival run the garden line across the bed from stick to stick and dig a trench the width of a spade just down to the dung. But if dung has not been layered in the bed at the time of making, the trench should be dug deeper, say 8 inches deep. Place the removed earth on the side of the trench opposite the line, and keep the sides straight and sharp cut. Now remove the line and put in a 2-inch layer of dung, sprinkling upon it a little earth so that the roots of the plant do not come in contact with the manure. It would be helpful to the plant if some crushed bones were now added to the trench. If at the time of planting the roots of the roses are the least dry, dip them in water before putting them in the ground. Set the plants in the trench at the determined distance apart from each other backing them against the side of the trench where the line went. See that the junction of the rose with the stock comes half an inch below the surface. Spread out the roots as far as possible taking care that they do not overlap one another and proceed to partially fill in the trench. If the removed soil does not crumble readily, some other fine mould or burnt

earth should first be put in; in other words, the first lot of soil to go in should be that which is most friable in order that it may fall about the roots and cover them. Now fill in the greater part of soil, after which take hold of the plant just below where it is budded, giving it a gentle shake with a slight upward pull, but not enough to bring the junction above the level of the trench; this assists the earth to settle about the roots, and gives the roots a natural downward tendency. Whilst holding the plant press the earth gently with the foot to keep it in position, and when every plant in the trench has been treated in this way, pass back along the trench, treading the earth as firmly as possible. When the roses are thus all firmly trodden the rest of the earth may be shovelled in, taking care that it goes close round the plant, leaving no cavities. Do not tread this last layer of earth; let it lie loose—the rain will settle it sufficiently.

The process of planting is finished; the roses are left slightly earthed up above the level of the bed by the last lot of soil, and this earthing up will afford all the protection needed by the rose during the coming winter. But apart from protection, it is always desirable to mould up newly planted roses, whether planted in autumn or spring, because the freshly moved earth of the trench generally settles, and by pruning time the bed will be almost level.

Some authorities advise a covering of dung manure be spread over a bed of newly planted roses as a winter protection. I am not prepared to endorse this except in the case of some tender Teas, but if done at all it should be a very slight dressing indeed, just enough to cover the

ground, nothing more. And for this reason: our aim should be to get the earth to settle down as soon as possible after planting. Rain will do this better than anything, but a covering of dung prevents the bed from feeling the full force of the rain.

One word more. When digging the trenches do not take each row in succession, but every other one the first time, and the omitted rows afterwards. By adopting this method we shall have more room to work supposing that one or two men are employed digging the trenches, but an open trench in close proximity to that in which we are planting is apt to have the sides broken down. Roses planted in autumn should be inspected after a spell of frost to see whether or not the soil has been loosened—it very often is—and, if so press it down again, remembering that loose soil at the roots hinders growth.

(*e*) *Planting Singly or in Borders.*—Specimen plants of the strong-growing roses planted on lawns, either singly or in groups of three or four, are very effective, especially if the varieties selected are evergreen. But this is often a question of space: space that the roses may grow naturally, the root-shoot being allowed to grow up free and unfettered, and then next year in the flowering season, arching over outwards laden with flowers. And bear with me whilst I repeat that this bending over—so opposed by some gardeners, who promptly tie the shoot up—is nature's plan for encouraging new growth to ascend from the base of the plant, which in turn will replace the flowering shoot just passing away; it is so important to remember this.

In the case of these single specimens, they are generally intended to last some years—*grandiflora*, for example, does not arrive at its full beauty much under seven years—and therefore the rose requires more plant food to be given at the time of planting than is the case with small-growing plants in groups which can be lifted, the soil renovated, and the rose replanted without injury. The bed being either round or square, a hole should be dug 4 feet in diameter, the soil being removed to a depth of 2 feet and the bottom broken up with a long-tined fork. Fill up the hole to 1 foot of the surface with some fibrous loam; the best for the purpose being the top spit of meadow land, either freshly dug, or, what is better, that which has been clamped a year or two. Chop the spits in twos or threes, so that when put in they will lie as close together as possible, the interstices being filled up with fine mould. On this put a layer of farmyard dung, 3 or 4 inches thick, covering the manure with a dusting of fine earth, and afterwards applying a good sprinkling of half-inch bones—not bone meal, it is not lasting enough. This should bring up the compost in the hole to within 8 inches of the surface. On this compost set the rose in the centre of the hole, the depth of course being regulated by the union of bud with stock, unless the plant is on its own roots; spread out the roots on all sides, and as far apart as possible: fill in the bed, getting some one to hold the plant in position whilst so doing; tread the soil firmly, but allow a surface of 2 or 3 inches to remain loose. A rose thus planted will last for years, especially if permitted to grow naturally.

The plant should be secured to a central stake or iron standard sufficient to keep it steady and enable it to obtain a root hold. In process of time it may happen that the new growth will need support, and, if so, do not bunch the growths to the central stake, but affix additional ones at a distance from the centre, merely to assist nature and to keep the shoots from reaching too far over the grass and so hinder lawn mowing. But for my part I like to see the shoots arching over and straying about the turf, the grass thus covered being left untrimmed.

Most of the strong growing so-called climbers rejoice at this treatment, especially the *multiflora*s and their hybrids. Crimson Rambler is seen at its best when not tied up, but allowed to grow in this manner; but bear in mind these varieties have only one crop of flowers annually, although they continue some weeks in bloom, and should therefore be regarded primarily as flowering shrubs. To keep them within bounds and to prevent them from becoming tangled bushes, the old wood should be cut away, not annually, only once every three years or so according to the growth made; but in cutting the symmetry of the bush as an ornamental shrub should be kept in view. Forgive this digression, in dwelling upon specimens one must for a moment refer to pruning. More on this point later.

The bed at first will doubtless seem too large for one plant only, but we must have an eye to future growth; it will not be too large in a year or two, and, meanwhile, roses of a dwarf habit may, with advantage, be added to the bed. Roses to be trained as pillars, or indeed any

rose planted separately, should be treated in the same way.

Where roses are planted irregularly in beds, or placed in borders in company with other flowers, separate holes for each must, of course, be made, but each hole should be at least 18 inches across. In other respects the method of planting in trenches should be followed.

V. Planting Standards

Standard roses feel the force of the wind more than dwarfs. To prevent them from being displaced from the upright, or their roots strained, they should be planted slightly deeper; 6 or 7 inches deep is quite sufficient. The method of planting is the same as for dwarfs. Security of position is effected by staking or some other artificial support. It is not advisable after planting to leave them without support longer than can be helped, otherwise, especially if their heads are heavy, they will work themselves loose, thereby straining the roots and creating a cavity in the ground round the stem through which rain will penetrate and, if dry, evaporation will ensue.

Some authorities advise that standards should be staked at the time of planting, before the earth is filled in, for by so doing contact and consequent injury to the roots through the stake is avoided. This, of course, refers to wooden stakes, but if iron standards with a bent foot are used, they can be driven into the ground after the planting is done. These irons, which can be made by the local blacksmith, should have a crank forming a foot 12 to 18 inches in length, according to

the height of the iron, and should stand from 4 to 6 inches away, so that, when put in the ground, the foot runs clear of the roots: they are preferable to wooden stakes, because they will last a lifetime.

If standards are planted in rows we can dispense with individual staking. A firm post or strong stake sufficient to bear a medium strain should be fixed in the ground at each end of the row, with lighter stakes at intervals—say, about 6 yards—and should stand 4 feet high above the ground. Tarred twine, not sack string, should be strung from post to post at the top right down the row and strained tight, and to this the standards are tied. It will afford sufficient support to the whole row of standards, at the same time allowing just enough play before the wind to prevent the plants from feeling its full force. It is noticeable that plants in their natural state always yield somewhat to air pressure, thereby lessening the strain on the branches. It is obvious, therefore, that to tie up a standard so rigidly that the stem remains immovable causes a great strain on the top resulting sometimes in the head being blown off. Tarred twine can be obtained in various thicknesses of any rope manufacturer.

Standards, when planted in rows, should be from 18 inches to 2 feet distant, the distance is relative to the variety, and the rows 3 to 4 feet apart. Standard stocks for budding can be planted closer.

Before passing to our next point let me once again emphasise the importance of keeping the roots of all roses moist at the time of planting. When lifted from the spot where they have been heeled in, it will be seen,

especially in the spring, that little white rootlets have been formed. The plant is active; it has commenced growing. In trimming the roots, retain as many of the white rootlets as possible, and do not let them wither; they will assist the plant to establish itself speedily. But whether it has made white roots or no, it is absolutely necessary that the roots should be kept moist whilst out of the ground. Unless the atmosphere is damp, keep the roots covered. It all means extra trouble one knows, but it must be done; neglect it, put the roots in dry, and you are courting failure. Your plants have not done well—never do well, you say—the first year after planting; and although you are inclined to blame the roses, the weather, or the sender, in nine cases out of ten the blame rests with the gardener.

Reference has been made to trimming the roots. All roots should be trimmed or tipped slightly, it makes the planting easier; but more than this, we trim the roots for the same reason that we prune the wood—to encourage growth. An injured branch will not thrive, neither will an injured root; in both cases the injured part must be removed.

VI. Labelling and Registration

In order to prune a rose correctly we must, first of all, know its name. It is not sufficient to know whether it is a Hybrid Perpetual, Hybrid Tea, or Tea, because as a result of cross-fertilisation or the interbreeding of class with class, each rose has more or less its own idiosyncrasy. Therefore until by constant practice we are able to recognise a variety by its wood and prickles, the rose

must be labelled or its name and position in the bed registered in a book.

Where beds are planted each with its own variety, one label in the bed will be sufficient, or where roses are planted in rows, several varieties in the same row, labels or sticks should be placed in the row where each sort commences. Except in the case of standards and where the label is affixed close to the junction, it is not advisable to attach labels to the plant itself, because sooner or later the shoot on which the label is hung will have to be removed, and then, unless we are on the alert, away goes the label.

As to the best label it is, I think, purely a matter of choice. At one time I used the staves of butter tubs. These tubs were obtained at the grocers, taken to pieces, and the staves, like large tallies, served as labels. The end of the staves to be placed in the ground were dipped in tar, and the other part either left the plain light-coloured wood or painted white, on the surface of which the name of the rose was painted in lamp black. I do not recommend them for use in the pleasure garden, they are too large for that, but they are excellent for a patch of roses grown in rows in a field or kitchen garden, because the name can be seen at a distance.

Under the best arrangement however, labels are liable to be either misplaced by hoeing, or the name obliterated by the weather; the only safe way of preserving the identity of the rose is by noting it in a book—by registration. The method I have for years adopted is this: After a bed is planted, a record is made in a small notebook, giving the bed or piece of roses, the rows the name and the number

of plants of each variety in each row. By keeping such a record we are entirely independent of all labelling, and when we want to ascertain the name of any particular variety either in the pruning or flowering season, or cutting buds for budding, all we have to do is to take our book and refer to it.

The amateur who is constantly among his roses will soon be able to recognise the leading sorts without the assistance of either label or book, and before long will know them all except the newer varieties. Many people think that in order to tell the name of a rose it is necessary to see the bloom, but a little experience will prove that wood, prickles, and foliage are surer guides. Roses vary as much as hounds in pack; to the novice hounds are indistinguishable from one another. Not so with the huntsman or the keen sportsman; they know each one. So it is with roses. After a while the amateur at pruning-time will be able to name a particular rose by wood and thorns only, although it may be one of the large family of Hybrid Perpetuals. Observe the judge at an exhibition. A rose is brought to him to name; what is the first thing that he does? He looks at the wood, thorns, and leaves, for the colour and form of the flower may be out of character, but the wood, thorns, and leaves never, except in the case of the foliage when grown under glass. For instance, among the Hybrid Perpetuals there is one rose that has no counterpart—Gustave Piganeau—and this distinctness, as we have already noted, is found in the lyre-shaped stipules growing on either side of the base of the leaf-stalk. Again, the smoothness of the wood and the irregularly placed white prickles of Madame

Victor Verdier, or the peculiar red of the crowded thorns of Alfred K. Williams, or the short-jointed growth and reddish bronze foliage of Victor Hugo, will be surer guides in naming these varieties than looking at the bloom. All three are dark red roses, and, although distinct in form when in perfection, may have from various causes lost their colour.

From these few remarks it will be seen (1) that each variety should be known. Pruning and budding cannot be correctly carried out without it; (2) that roses may be labelled but the label, except in the case of standards, should not be attached to the plant; (3) that the only sure method of preserving the name is to record it in a book.

VII. Protection

In a previous chapter it was noted that the majority of hybrids of Teas and Perpetuals were derived from two main sources, *R. damascena* and *R. indica*. Those roses in which the strain of *damascena* preponderates are more or less hardy, and will, when well ripened, withstand the cold of winter. On the other hand, those roses derived principally from *indica* are more or less tender. And it may be noted, by the way, that when we find a certain variety of the Tea section seldom if ever cut by the winter frost it is strong evidence that it is not altogether a pure Tea, although sent out by the raiser as such. There are of course exceptions, but as a rule all Tea-scented Roses require some amount of protection.

Now there are two periods of the year in which roses suffer from frost—in winter and spring. In the former

the injury is inflicted on old or last year's wood, in the latter to the young spring growth. The protection of spring growth is a point that arises after pruning, a subject not immediately before us; we are now discussing how to protect roses after planting and before pruning. Let us confine ourselves to it.

To protect dwarf roses from winter frosts there is no better method than earthing up. Here again is demonstrated the advantage of growing the plants in rows, for the earth is skimmed from the space between the rows, and laid up in a ridge along the line of plants, like moulding up potatoes. A covering of earth some 2 inches above the union of rose with stock will suffice, although the higher the plant is earthed up the more of the wood will be preserved, because the wood below the surface of the soil is seldom injured by frost. When plants are thus earthed up and a severe winter follows, the frost may do all necessary pruning, but it will not kill the plant.

This earthing up method applies to roses of short growth, but with roses which produce the blooms from the lateral eyes of long growth, such as Bardou Job or L'Ideale, for instance, it is necessary to do something more; for if these long shoots are cut the plant in spring will expend its energy in making fresh wood on which to give its flowers. To preserve long shoots they should be bent and pegged down as low as possible, and the whole row—supposing they are grown in rows—covered with bracken or some other material. I have successfully used boughs of common laurel or holly as a covering. Even with dwarf-growing roses, in addition to earthing up, a

bough or two of evergreen stuck round each plant will serve as an effectual protection.

With standards another system must be adopted. Here the vital part to be protected is the junction of rose with stock. A hayband, a wisp of straw, or bracken —the last-named is the best by reason of its lightness— may be bound round this part, and when thus protected it matters but little if the top is left exposed. Because the frost strikes downward, an inverted cone of straw or a straw envelope used for wine bottles, cut and opened out, are said to be good protectors. I have tried this plan, but cannot say that such a covering is absolutely perfect, since the cone seems to afford too much protection: it keeps the standard warm, thus engendering premature growth. Therefore of the two methods I prefer the single wisp round the junction.

But when all has been said the question arises, is it really worth while for the ordinary amateur to grow those Teas and other sorts that need so much protection in the winter? There was a time when we wanted them for the sake of their colour, and because, in contrast with Hybrid Perpetuals, which formed the bulk of our garden roses they flowered well in autumn. But now there are such hardy Teas as Marie van Houtte, Maman Cochet, and White Maman Cochet together with many excellent hardy Hybrid Teas of the same character and similar tint, all of which require no winter protection that one hardly thinks it is. And therefore to those who desire a few varieties only, my advice is this: cultivate only hardy sorts and leave the rest alone. And to all I would say, a rose that invariably succumbs to winter frost may well be dispensed with altogether.

CHAPTER X

PRUNING

I. General Remarks. II. Object of Pruning. III. Pruning and Thinning. IV. Tools for Pruning. V. Time for Pruning. VI. Pruning for Exhibition. VII. Pruning Decorative Roses.

I. General Remarks

The subject of pruning is a matter of such great importance that in order to make this chapter as far as possible complete in itself a certain amount of repetition must of necessity result, especially of some remarks made when previously dealing with individual varieties. It is therefore hoped the reader will pardon it.

To prune a rose correctly requires in some degree a knowledge of two things: of its habit, and the manner in which the flowers are produced. With reference to habit. As a general rule the stronger the growth the less the plant should be pruned, and the weaker the growth the harder it should be pruned. Hard pruning means cutting the shoots of the plant shorter. As to the mode in which flowers are produced, there are three ways in which this is done: (1) From the laterals or side-shoots of the stem, such as, for example, Gloire de Dijon, Crimson Rambler, and *R. canina;* (2) from a shoot springing from a side-shoot, such as the Austrian Briers; and (3) from the tip of the shoot, such as the

Hybrid Perpetual, Hybrid Tea, and all the Teas except those which are similar in growth to Gloire de Dijon.

The next point to be considered is, do all roses make wood and give flowers on this wood the same year? The answer is no. Some roses make their growth one year, on which the flowers will come the following year; they do not send up a shoot and give flowers on it all in the same year. This is the case with Crimson Rambler, the moss, and all other roses that have only one crop of flowers in the year, called summer-flowering roses; varieties that are not perpetual. Then there is another class putting forth long shoots in the spring which will bear flowers late in the summer and have another crop in the autumn, such as Rosette Légion d'Honneur. And there is a third class—by far the largest of the varieties in general cultivation—that send up a constant succession of shoots on which flowers appear within a few weeks.

This being so, before we commence to prune a rose we must know to which of these classes this particular variety belongs. Many a rose is ruined from lack of perception as to its habit, or from indifference on the part of the operator to vary his time and method of pruning to suit the variety, but treats all roses alike, just as if they were so many pears or plums. He cuts them all at the same time of the year, cutting them as he imagines into shape, regardless whether they are summer flowering or perpetual. Ramblers and Dijon Teas are cut hard back in the spring just exactly as he does the Hybrid Perpetuals.

II. The Object of Pruning

The question will perhaps naturally arise, if pruning requires such discrimination, would it not be best to leave roses unpruned? We do not prune chestnut trees, for instance, why should we prune rose trees? But the rose is not a tree. It is a plant, a bush, and more than that, a particular kind of bush. Some bush plants or shrubs, such as the rhododendron or laurel, send forth their new growth from the end of the growth made the previous year, but a rose never. In its natural state it throws up new growth either in the form of root-shoots or suckers, direct through the soil, from quite low down the main stem, or from some part that has received a check to the sap, perhaps from the bending over of the long branches, or from a cut or fracture. Once again I ask you to note the habit of any rose in its natural state and learn the lesson. But the cultivated rose is usually an artificial production; the majority do not thrive so well on their own roots as they do when budded on a wild stock, and therefore cannot throw up suckers. By budding we have interfered with nature; an artificial method of cultivation has been adopted, and so we must prune in order to encourage that growth which shall serve as a substitute for suckers.

III. Pruning and Thinning

Speaking in general terms, for pruning purposes there are two main divisions of roses. (1) *Dwarfs.*—Under which head may be included those shorter growing roses

such as the Provence, Damask Hybrid Perpetual, Hybrid Tea Tea-scented, and the like. (2) *Pillars.*—Under this head we may place pillar roses, and climbing roses so-called—but no rose really climbs—together with those strong-growing roses which send up long shoots from the base or from a point half-way up the old stem, and produce their flowers from the laterals. By lateral growth we mean roses that flower from the side shoot thus:—

Fig. 3.—Lateral Growth.

These two classes require different treatment the one from the other, since the purpose for which we prune is in each case different. That is to say in the case of

No. 1 we prune to obtain strong growth, for if left unpruned the growth, in most instances, would be weak; strong growth generally results in fine flowers and *vice versâ*. In the case of No. 2 we prune, not primarily to get strong growth—that has already been obtained—but so to cut out the old wood and weak growth that sun and air may be admitted to ripen the young growth left on the plant; or, to put it more concisely, No. 1 is pruned, No. 2 is thinned. Let us, therefore, within the scope of this chapter limit the term "pruning" to No. 1, and the term "thinning" to No. 2. It by no means follows, however, that all dwarfs and all pillar roses range themselves in these two divisions; that is too much to expect from a family whose ways are so devious, and this classification is only for demonstration. So that before commencing to prune a given rose we should ask ourselves, Will pruning improve the quality of the flowers of this particular variety? If the reply is no, then the rose, dwarf though it may be, should not be pruned, but thinned only.

IV. Tools for Pruning

Pruning can be done with a knife or secateurs. Provided the knife is sharp, and time is no great consideration, the knife perhaps is best; it is generally thought to be so, for it cuts clean, leaves a smooth face on the wood, and does not squeeze the shoot as an ordinary pair of secateurs with a simple scissor-like action is liable to do. Personally I do not like the knife,

it seems to strain the plant however sharp it may be and however firmly the shoot is held. Moreover, the danger of pulling out the plant from the stock in the case of maidens is considerable.

What I prefer is a pair of secateurs having a draw action, such as Fig. 4, which for all practicable purposes

FIG. 4.—French Secateurs.

has the same action as the knife or a smaller, handy, but very powerful tool as Fig. 5. These tools if kept

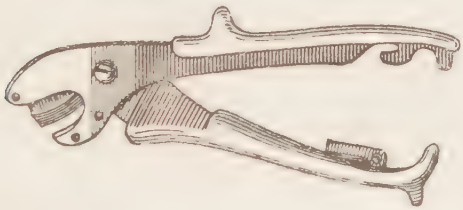

FIG. 5.—The Levin Secateurs (American).

sharp will, with little perceptible pressure on the stem, cut through strong wood and cut clean. And they have this advantage over the knife, there is no pull on the plant, and with them the pruning process is more expeditious. Where the shoots spring close together from the base of the plant, thereby making it difficult to insert the secateurs, the knife must be used, but when one becomes accustomed to the secateurs there

are not many cases where the knife will be required. In thinning out old hard wood from the strong-growing

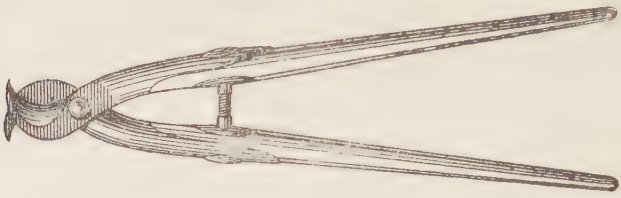

Fig. 6.—Pruning Shears.

pillar roses a pair of shears such as Fig. 6 is recommended.

V. The Time for Pruning

A fortnight before the last severe spring frost is the right time for pruning perpetuals if only one knew when that was to be. As a rule it will not be well, except when there are many to be pruned, to commence operations much before 21st March, for if you do it might be a case of more haste less speed; and plants breaking well might receive such a check from a late spring frost that the young shoots will be worthless, and the plants will have to start afresh. In some seasons the mild weather of February will bring on the unpruned plants so fast that one feels these young shoots are exhausting them. But I do not think this early growth does as much harm as some people think. I have pruned roses when the young shoots have been 3 or 4 inches long, and have formed buds the size of small peas, yet they gave good blooms after pruning, just the same as usual. If, however, you fear the plants will bleed when cut in this

active state, and that they will suffer accordingly—I do not think it matters much if they do bleed, a cold night soon stops it—have some painter's knotting by you, and with a small brush paint the tops of the shoots directly they are cut. This should be applied immediately after cutting, before the sap flows, or the knotting will not adhere. I have tried early and late pruning, cutting some about the beginning of February and others a month or six weeks later, but by May those pruned late have overtaken the others. Quick growth is preferable to slow growth. If a sharp frost occurs after the buds are formed so that they receive a check, no matter how small the buds are, they will show the effect of it in half-formed, quartered, irregular flowers. But malformed flowers are not always due to early pruning, but to the cold weather and unequal temperature frequently experienced in May and June. The kind of weather in which to prune, if you can choose your time, is a cold day, with a suggestion of east wind and sleet, for the plants will then be less active and less likely to bleed than they would be in warm sunny weather.

VI. Pruning for Exhibition

Dwarf Hybrid Perpetuals

Now as to the actual pruning. Standards except for Teas being almost things of the past, we must deal chiefly with dwarfs. There are three stages in the life of a plant: (1) The budded stock with dormant bud; (2) the maiden or yearling, and (3) the cut-back or pruned plant. The treatment of the budded stock will be con-

sidered later under budding. For pruning purposes our attention must be given first to the second stage of the plant, the maiden. Fig. 7 is a sketch from nature of a plant that awaits pruning. This plant is selected because

FIG. 7.—Maiden Plant awaiting Pruning.

FIG. 8.—Cut-Back Thinned.

it represents an average maiden. Some maidens have two shoots, others four or more springing from the bud inserted the year before. How are we to deal with it? Observe it has three shoots all close together. The central shoot is not required since its presence will

hinder the other shoots from breaking, except on the outside, and they likewise will stifle the central shoot. So we cut it out as low as possible (see mark on the middle shoot, Fig. 7), thus giving air and freedom to the other shoots to break on all sides. Here is an instance of where the knife must be used instead of the secateurs. At the same time we shorten the two remaining shoots (as shown in the sketch) to three or four eyes from the base. If, however, quantity rather than the quality of the flowers is the object in view, the shoots should be left about 6 to 8 inches long. It is not advisable to hard prune a plant in this stage of growth, but leave the more severe treatment until the following year. So far the operation of pruning presents no difficulty. It is otherwise when we come to deal with such a plant as is shown in Fig. 8. This is another sketch from nature, a plant of Ulrich Brünner. Here is a fully developed dwarf with wood of different ages, spring growth and summer growth, the latter being represented by the shaded parts. It has already been stated that the best flowers come from strong young wood, therefore there can be no question which of the two sorts of growth we should leave. Cut out the old and leave the young wood springing from the base. This we proceed to do before pruning the plant (see Fig. 8).

But stop a bit. Are you quite sure these three strong summer growths are ripe? If the wood is hard, not pithy and soft, leave them as in Fig. 9, but if the summer and autumn has been dull and wet, or if the growth was made late in the year it will in all probability be unripe. Pinch the wood between thumb and

finger; if it gives it is no good. Or press the prickles on the stem gently with the thumb. If the wood is ripe they will fly off at the base; if the wood is not matured they will only bend and break. If, therefore, the growth

FIG. 9.—Cut-Back Pruned hard.

FIG. 10.—Cut-Back with old Wood left.

is unripe these long shoots must be cut away, and only the spring growth left. Your plant will then appear as in Fig. 8—a thick bushy plant still. To allow all this wood to remain will result in short, weak, new growth. Some must be cut out. So we cut away three side-shoots, as shown in Fig. 8, leaving two only. They will be quite

sufficient for either exhibition or garden purposes. Prune these two remaining shoots as shown in Fig. 8; you will find there is plenty of old wood left from which the young growth is to break. To leave more wood will entail more work for the plant, and many shoots requiring to be fed by the roots must weaken the quality of the flowers. We have in these two cases treated of two strong growing varieties, consequently the pruning has been moderate, since if harder pruning were resorted to the young growth following would be excessively long, and probably many shoots would be blind; there would be growth at the expense of flower. On the other hand, with less vigorous growers the treatment must be more severe. In operating upon older plants than those shown in the sketches, let the same procedure be carried out as in Figs. 9 and 10, but with this addition, viz.: Thin out where possible all wood over one year old first of all, and then consider whether the spring or summer growth should be left.

FIG. 11.—The Place to Prune.

In making the cuts, do it as close to the eye of the bud as possible (see Fig. 11). To cut at the dotted line is wrong for all the wood between that and the bud below will die, leaving a hard brown stump. As to the appearance of the beds immediately after pruning, the shoots will average from 2 to 6 inches high with Hybrid Perpetuals. To the inexperienced rosarian, this will suggest ruthless destruction, but let him fear not, try it for one year and he will find out his mistake.

Besides, the harder he prunes the longer the plants will remain in the young stage; the stage in which the best roses are expected, the maiden and two-year-old plants.

Standard Hybrid Perpetuals

Prune these on the same principle as for dwarfs. It is a great mistake to prune standards with the sole idea of preserving a good shape so-called; a mop-head in fact. Keep the centre free, leaving only three or four outside growths as far apart from each other as possible. Prune these from 3 to 5 inches, according to the habit of the variety, cutting away all the rest close to the base.

Hybrid Teas

As a rule Hybrid Teas require less hard pruning than Hybrid Perpetuals, otherwise the principle is the same. Some Hybrid Teas, Caroline Testout, for example, are best left fairly long, say, 2 or 3 feet, merely thinning out the old wood, and pruning the young growth one-third of the length. But since the roses of this class are so variable, some closely allied to the Tea, and others to the Hybrid Perpetual, it is difficult to give directions as to treatment applicable to all. Observe the habit and constitution of each variety and vary your operations accordingly, pruning some and only thinning others.

Teas

Teas should be pruned last of all. One hesitates to say when, so much depends on the climate, but usually they are pruned in April. The frost generally prunes our Teas, and all that is left for us to do is to cut them

back to sound eyes. Adopt the same method as with Hybrid Perpetuals and Hybrid Teas.

Pruning Decorative Roses

For all practical purposes roses for the garden may be classed in two main divisions. Those that have one crop of flowers in the year, and those that have a succession of crops yearly. These, as has been noted already, are usually known as "summer flowering" and "perpetuals." Summer-flowering roses, considered with reference to pruning, group themselves under three heads: (1) The strong-growing species or wild roses other than briers and their hybrids: (2) The brier and its hybrids; (3) Dwarf species and their hybrids. Each of these three require different treatment.

DIVISION I

Summer-flowering Roses

(1) *Strong-growing Roses*

Under this heading are included for example, such species as *R. multiflora*, *R. sempervirens*, and their hybrids, as Crimson Rambler and Félicité Perpétué: in fact, all pillar roses. How shall we treat them? To answer this I repeat, observe their manner of growth. The plant as soon as the blossoms open commences to throw up, principally from the base, long fat shoots, which eventually thrust themselves through the lower bush right up into the air. Then they begin to arch over the plant in order to bask in the sunshine, and the wood at first a pale green, becomes darker, in some cases a bronze green, whilst the

thorns, once the same colour as the shoot and bending at the points when pressed, now assume a contrast and are firm. Push against their sides, and they fly out close to the stem. By this we are assured that the plant is healthy, the wood ripe, the frost prepared for, and that flowers will come next June.

But what of the old shoots which have just given us masses of flowers? In the majority of cases, the Wichuraianas and Banksias are some exceptions, this growth has done its work; it will either flower no more or flower feebly; *the new growth has been sent up to replace it.* It is quite clear, therefore, that if we were to cut back these long young shoots in early spring in the way we prune Hybrid Perpetuals we should be hindering rather than assisting nature; we shall be cutting away all the wood on which the best flowers are to come, and the plant will have to make some more. Let us then, say in August, when the young shoots are growing, cut out the old wood that has yielded its crop of flowers, together with any that is dead, and do it as close to the base as possible (see Fig. 12). This will admit light and air, the young shoots will be better able to ripen, and the bush will be kept within bounds. These long shoots may then be secured to stakes or rails—not bunched together—to preserve them from whipping and bruising in the wind, and the plant be left to await next year's flowering, no further thinning and no pruning being necessary.

(2) *The Briers*

Here again we must observe the manner in which the flowers are produced, and then we shall realise that the

treatment recommended above for *R. multiflora* and others is not altogether applicable to the brier. As briers we

Fig. 12.—Blush Rambler; showing Method of Thinning.

may take as examples the *R. lutea* group, such as Austrian Copper and Yellow, and *R. rubiginosa* and its hybrids, the Penzance Sweet-briers.

Let us take first the Austrian Copper. The plant commences to send up shoots much in the same way as those of Subdivision I., although not with the same strength. But now comes the divergence. These shoots will not bear the flowers, they must first send out laterals, doing so the same summer, and from these lateral shoots will come next year short flowering growth. The plant demands this and we must assist it. If the long shoot exhibits no signs of breaking it should be bent over and down as far as it will go, the eyes will soon break into growth, and the shoot may then be set free. It has now made a double growth; on the next growth the flowers will appear. That is to say, in the spring following the second growth—the lateral growth—will break, and after running from 3 to 6 inches will develop blooms. Its work is done; another series of shoots will spring up when the above process is repeated. But, after all, the brier does not always lend itself to special treatment, thinning out old and dead wood excepted, and sometimes it departs from the general rule, often, in the case of the Penzance briers, throwing up strong shoots from which it flowers all in one summer. On no account should briers be pruned; the knife does but encourage growth at the expense of bloom. The wild dog-rose, *R. canina*, and the Austrian Copper will, when in flower, indicate more clearly than any written description the wood from, and the way in which the flowers are produced.

(3) *Provence, Moss, &c.*

This is the third and final subdivision under which we have here classed the summer-flowering roses; it comprises Moss, Damask, Provence, and the like.

Here again the flowering wood is made in the previous summer. The plants should be thinned, when there is need for it, in August and September, the earlier the better cutting out the wood that has just flowered, preserving the growth of the present season. After thinning, prune the remaining shoots to about half their length not more.

With the mosses, some prefer to peg the long shoots down close to the ground, which will cause them to break from several eyes into flowering wood.

DIVISION II

Perpetual or Autumn-flowering Roses

The varieties of this division are well known. As decorative roses they include (1) a few Hybrid Perpetuals, (2) the greater number of Hybrid Teas, (3) all the Chinas and dwarf Polyanthas and (4) about two-thirds of the Teas.

(1) *Hybrid Perpetuals*

The treatment is the same as for exhibition Hybrid Perpetuals except in the length to which the shoots should be shortened. These should be pruned back to 18 inches or a foot. If cut shorter than this they will make wood, and certainly give good flowers, but they will not be so many nor so early as when the shoot is left longer. Being far less active than the Hybrid Teas or Teas, some rosarians prune them a second time as soon as the first crop of flowers is over. This is done to excite fresh growth and so obtain a better autumn flowering than if left alone, but I do not advise it.

(2) *Hybrid Teas*

Of the perpetual roses suitable for the garden, the Hybrid Tea is by far the best. Its activity is so great that it sends up a constant succession of fresh shoots crowned with flower-buds until quite late in November. As we have observed when treating of this rose for exhibition purposes the Hybrid Tea as a class is so variable that no definite rule as to pruning can be given. But as for exhibition so for the garden, it were better to leave them all unpruned than to prune too hard.

(3*a*) *Chinas*

Chinas are hybrids derived from two distinct species, *R. semperflorens* and *R. indica*. Those varieties which in constitution are allied to the former, such as Old Blush Monthly, should be thinned, not pruned, and the *indica* type, as a rule, should be pruned slightly. But carefully note the habit, and prune accordingly.

(3*b*) *Hybrid Polyanthas*

The varieties of this class vary but little in habit, which is short and compact. Given a sheltered situation and warm climate, this rose develops into fair-sized bushes, throwing up strong growth from the base, and where this is the case the plant needs thinning only.

(4) *Teas*

As noted under Teas for exhibition these roses must be classed under two heads: (*a*) the "Dijon Teas," and (*b*)

the dwarf Teas. The former flower from the laterals of the long and autumnal growth, which should not be pruned, thinning out the old and dead wood being all that is necessary. The dwarf-growing Teas, which, like Hybrid Perpetuals, flower from the terminal, should be pruned late in the spring, but only slightly, just to bring them into shape if grown in groups. If cultivated as single specimens they are, on the whole, best left alone. This is applicable especially to Amazone, Madame Chédane Guinoisseau, and Madame Lambard. Varieties of moderate growth should be pruned hard.

CHAPTER XI

BUDDING

I. Stocks: (1) Manetti, (2) Cutting Brier, (3) Seedling Brier, (4) *R. multiflora*, (5) De la Grifferæ, (6) Standard Briers. II. Planting Stocks. III. Budding Dwarfs: (1) Preparing Stocks, (2) Selecting Scions, (3) Cutting and Preparing Buds, (4) Cutting Stocks, (5) Inserting Buds, (6) Binding. IV. Budding Standards.

Budding is the chief method of rose propagation. Budding is a pursuit interesting to all rosarians, but for the exhibitor of exhibition roses it is more—it is an essential to successful competition. The late Mr. William Paul, in his handbook on "Rose Culture," observes: "The grower for exhibition will hardly come near the top of the tree as a prize taker unless he grows largely and to some extent buds his own stocks. Certain sorts of roses throw finer blooms from the single shoot that pushes the first year from the dormant bud than from any other source. Hence it is important with the exhibitor to have, at least, some stocks planted and budded where they remain to bloom."

Before we enter upon the subject of budding, it should be remembered that there are two ways in which roses are grown for exhibition: (1) As "maidens," *i.e.* yearling plants budded the previous year; and (2) As "cut-backs," *i.e.* established plants, which require to be pruned or cut back in order to produce good flowers.

Now experience will prove that one maiden plant of most exhibition sorts especially Hybrid Perpetuals, is worth at least two cut-backs, and, therefore the proportion of plants for an exhibitor to have, if to quote Mr. Paul, he desires to "come near the top of the tree as a prize-taker," is two-thirds maidens to one-third cut-backs. Maidens possess two distinct advantages over cut-backs: (1) stronger growth, better foliage, and finer flowers; and (2) a prolonged exhibition season. And one might urge a third advantage: that, in the case of some sorts it is from maiden plants alone that satisfactory exhibition blooms can be obtained—such, for instance, as Horace Vernet, Générale Jacqueminot, and, in the south, Mrs. W. J. Grant.

The exhibitor who relies solely on cut-backs may have a good season while it lasts, but it will be comparatively brief—just a week or so—for notwithstanding the most careful management the flowers will all come on much about the same time. There will be a blaze of roses at the first, and then, at the height of the rose season, there will be an interval before those blooms on the second growth, the long shoots which run up from the base, come into flower.

But with maidens it is different: the flowers on the short growth will come first, in many instances even before the majority of cut-backs; one after another, maiden plants, under good management, will supply a constant succession of first-rate flowers for a whole month or more. I said good management. This brings us to the question of stocks because maidens come into flower earlier on some stocks and later on others.

I. Stocks

There are several stocks admittedly good, on which roses are grown, and there are others at present on their trial. The principal stocks are the Manetti, Cutting Brier, Seedling Brier, and Standard Brier, each with its own special characteristic and quality, which we will consider as we take them in order. This character makes itself apparent in the rose which it carries, and it should be the aim of the rosarian, whether he cultivates decorative or exhibition roses, to ascertain on which stock, in his climate, certain varieties do best.

As a general rule, hybrids possessing a preponderance of Damask are more at home on the Manetti than roses more closely allied to *R. indica;* the latter class, comprising Teas and Hybrid Teas, thriving better on the brier. But the rule has many perplexing exceptions, since some Hybrid Teas appear to prefer the Manetti to the brier—notably so, Mrs. W. J. Grant and Bessie Brown—whilst others of a similar constitution dislike it. Hence it may be gathered that a definite rule cannot really be laid down, and therefore buds of a new rose should be worked on both Manetti and brier, and the effect noted.

(1) *The Manetti* is an Italian stock propagated as cuttings, but originally raised from seed by Signor Manetti of the Botanic Gardens, Monza, and was introduced into England by Signor Crevelli, who recommended it as a stock to Mr. Rivers about 1835. The Manetti rose is of vigorous habit, dark red wood, bright, rosy dense prickles, and light green foliage; flowers pink, single, about 2 inches in diameter. In wood and

foliage it resembles Le Havre and A. K. Williams—both of which love this stock—and others of a similar type, the result being that suckers coming from the stock are sometimes mistaken for the shoots of the rose it bears and left on, and, being of vigorous growth, starve the good rose out of existence. How often one has heard a complaint that the erstwhile deep-red rose, full and large, has somehow or other deteriorated into little pink blossoms, or gone blind; and upon going to ascertain the cause has found bushes of Manetti and nothing else. Keep a sharp look-out for Manetti growth on established plants. Once more, when the maidens on this stock are just coming into growth, it is no easy matter to discern the difference between the shoot of the budded rose and the little red shoots that come from the Manetti stock, and the only sure way of dealing with it is to observe whether the shoot comes from the budded eye or not.

As a stock the Manetti has this advantage over others: the sap is more abundant and more continuous. So that not only is the union of bud with stock more readily accomplished but the stock retains its condition for budding until late in September, when other stocks, especially briers, have ceased to run. Owing to this abundance of sap, budding is more successful on the Manetti than on any other kind. Roses worked on this stock make finer plants the first year; but it is a general opinion—some varieties excepted—that the plants do not last so long as those on the brier. There is one class of roses, however, for which the Manetti is not a lasting stock, and that is Teas; these should be budded on something else.

Provided the cultivation is deep, any soil, whether light or heavy, suits the Manetti. It is good for light soils, since the roots, being short and very fibrous, will readily assimilate plant food. Being of vigorous growth, the Manetti should not be planted until later in the season than other stocks, say, about the end of February. If planted before Christmas, the stem of the stock—wherein the bud is inserted—is liable to be too strong and the bark too thick for the bud to thrive when budding time arrives. For a learner in the art of budding the Manetti is the best stock on which to practise.

(2) *The Cutting Brier*, a rooted cutting of *R. canina*, is the most useful stock we have, for all kinds do well on it, especially Hybrid Teas. Roses on this stock in the maiden stage are later than those on the Manetti in coming into flower, and whereas roses on Manetti, especially Hybrid Perpetuals, will cease growing by the middle of July, those on the brier in favourable seasons will continue to yield good exhibition blooms well into August, and be ready with a second crop in September.

Buds on the brier do not take so readily as on the Manetti. The stocks are more sensitive to drought, and even when the buds have taken and appear in the autumn to be doing well, one finds them dead in spring, probably owing to winter or early spring frost. The flowers on the whole are more perfect and better finished than on the Manetti. In deciding upon the proportion of stock to plant, the exhibitor should bear in mind the increasing class of Hybrid Teas, and grow two cutting briers to one Manetti.

Where the cutting briers are in good condition, that

is moderate in stem and well rooted, it is not advisable to plant them before Christmas. If laid in by the heels and planted early in February they will be quite fit to bud in August the usual budding month for exhibitors.

(3) *The Seedling Brier.*—Of this there are two kinds: *R. canina*, the dog-rose, and *R. rubiginosa*, the sweet-brier. Stocks of the former are considered to be the best, as the root stem on which the bud is to be inserted is generally straighter than the latter, and therefore is more easily budded. On the other hand, the seed of *rubiginosa* germinates more readily, and yields a better crop. Most of the seed of this rose will come up the next year, whereas that of the *canina* will in many cases remain dormant for two years.

Although the subject of raising varieties from seed will be taken later, nevertheless a few notes on raising seedling brier stocks should come here. In the autumn, or as soon as the heps are ripe, they should be gathered, broken up, the seed extracted and sown at once, care being taken not to let the seed become dry during the interval between gathering and sowing. A good plan for keeping the seed moist is to store it in a small tin box—for this purpose a cigarette tin will be found useful—having previously placed a pad of damp blotting paper at the bottom. As soon as sufficient seed is collected it should be sown in rows leaving a 10-inch space or thereabouts between the rows to allow for hoeing. Light sandy soil is best for this purpose and the seed should be placed about 1 inch below the surface. When the stems of the plants are not less in size than the thickness of a straw they are ready for transplanting

to the piece of ground where they are to be budded. On removal from the seed patch they will be found to have a long tap-root, almost as long as the shoot, which at the time of planting should be shortened to half the length.

Roses budded on seedling briers will come into bloom the first year later than those on cutting briers; this will still further prolong the exhibition season. Although for the first year they will not make such good plants as those on Manetti or cutting brier, yet when established as cut-backs will make better and more lasting plants. The roots of this stock are, so to speak, natural roots, strong and long, and will run far and deep in search of food; therefore a deeply cultivated soil suits them best. The seedling brier is somewhat difficult to bud, because the size of the stem is so variable and the space in which the bud is to be inserted is limited and possibly crooked, the result being that the take is moderate, and therefore the budding of this stock should be entrusted to experts.

We have now dealt briefly with the three chief stocks for dwarf roses. It may be found convenient if their characteristics are tabulated as follows:—

Stocks.	Soil.	Take.	Roses.	Plants.	Date of Flowering as Maidens.
Manetti	Light or medium	Excellent	Hybrid Perpetuals	Good for a year or two	Earliest
Cutting Brier	Medium or heavy	Very good	Hybrid Perpetuals and Hybrid Teas	Lasting	A week later than Manetti
Seedling Brier	Heavy	Fair	Hybrid Teas and Teas	Very lasting	Latest of the three

(4) *R. multiflora*, better known as *multiflora simplex* or the Bramble-flower Rose, is a parent of many of the newer *multiflora* hybrids. This stock is propagated by cuttings, which strike readily, and, being vigorous, are well rooted, and take the bud well. The late Mr. Benjamin R. Cant at one time had a good opinion of it, and gave me some to try; we budded them with Teas, and the take was excellent. The plants made strong bushy growth far better than any we have had worked on dwarf briers, such varieties as Maman Cochet, Marie van Houtte, and Edith Gifford being very good. I am not sure that the blooms were extra fine, but the plants flowered abundantly throughout the season. Most of them remained where they were budded for seven or eight years, and were only removed because the ground was wanted. In my opinion this stock is most suitable for many of the vigorous decorative Teas and Hybrid Teas which since that day have come into cultivation. Some growers do not like this stock giving as a reason that it will not bear transplanting; but those we moved suffered no check, and although they are at least twelve years old, are still healthy, and give good flowers.

(5) *De la Grifferaie*.—Another vigorous growing rose bearing pale pink, medium, semi-double flowers; wood long jointed green smooth, with a few scattered prickles; foliage pale green, rough and leathery like *R. alba*. This stock is used principally for strong growing pillar roses. Dwarf Polyanthas and Chinas like it, but its coarse growing nature tends to starve or smother the newly inserted bud of less robust varieties.

(6) *Standard Briers*.—At the present day standard

stocks are used principally for Teas, especially for exhibition Teas, on which stock finer flowers of most varieties are produced; for other roses it has given place to dwarf stocks. One reason for this is that the true Tea is more or less tender, and since the frost is less severe a few feet off the ground, Teas on standards suffer less. But there is another probable reason; certain varieties of Teas and Hybrid Teas, as we have previously noted, give finer flowers if left almost unpruned, or pruned not lower than 2 or 3 feet. This may be caused by the length of stem up which the sap has to rise before reaching the flower-bud, and if so, we can see another reason why standard rather than dwarf stocks are better for Teas.

Standards, or "brambles," as Essex folk call them, are obtained from the strong root-shoots of *R. canina* in the hedgerows and woods. To be in good condition these stocks should be a year old, having the bark mottled dark green streaked with brown, and about three-quarters of an inch in diameter. If you can avoid it, do not have the young, smooth, green, waxy-looking stock of one summer's growth, which "the bramble man" will sometimes smuggle into the centre of the bundle, because the wood and pith are too soft to withstand unprotected by surrounding growth the severity of winter. These root-shoots are cut away from the parent bush, having a portion of the hard root with one or two fibrous roots attached. When the base terminates in a knob which shows signs of young growth, that part should be cut off as close to the stock as possible, for if left on it will be productive

of suckers. It is advisable, however, to leave on a small portion of the old root when by so doing a fibrous root or two is retained.

Neither time nor opportunity is available for the majority of amateurs to get their own standard stocks, but at the hands of the ordinary "brambler" the stocks are frequently subjected to rough usage—kept possibly in an outhouse or in the kitchen, instead of in the moist ground, for fear that others might "come a-brambling" in his garden. Therefore, as soon as the stocks come to hand every care should be taken to keep them moist until planted: plunge them for a short time in a tub of water, heel them in so that the soil lies close around each one, and where the ground is dry give them a good soaking with water.

After planting, the stocks, where necessary, should be shortened to an eye about 3 feet from the ground to form what is usually termed half-standards; if single specimen rose trees are required, the stocks may be left higher. When they can be obtained, some extra long 6 to 8 feet standards will be useful on which to bud weeping roses such as hybrids of Wichuraiana, *semperflorens*, &c., but for exhibition Teas the half standard is quite long enough.

(7) *R. lucæ.*—This rose is a species belonging to the section *Cinnamomeæ*. It was introduced by Retzius in 1803, and of late years has come into prominence as a stock. It is not extensively employed, but is useful for early budding because the sap rises in this stock earlier than in others, and in addition to this advantage, the bark, being thin, will not smother the inserted bud,

however small it may be. The "take" on *R. laxa* is above the average, but the period in which it is in condition for budding purposes is short, as it ripens early.

II. Planting Stocks

Stocks, whether standards or dwarfs, should receive as much care as the very best of rose plants. Some authorities advise, especially with reference to standard stocks, that they need not be planted in good soil; that inferior soil is the best, otherwise they will make such strong growth as will inevitably smother the newly inserted bud. Now, such advice as this is surely wrong; one can always select medium-sized shoots on healthy standards, provided a sufficient number are left on. And besides, in the majority of sorts, flowers from the first year's growth from maiden plants are the best. Therefore, where space permits, stocks should be planted where they are to remain for at least three years; the first year in which the budding is done, the second for flowering the first time, the third as first year's cut-backs. With a take of 90 per cent. on dwarf stocks, which is what should be looked for in an average season, and at the hands of an experienced budder, the bed of maidens will not have many vacant spaces. There will be more gaps with standards budded with Teas, and it might be advisable from lack of space to plant standard stocks in a sort of nursery garden, from which, after blooming as maidens, they might be transplanted to the garden proper; but even so, do not under any circumstances starve them.

Dwarf stocks may be planted in single or double rows. Single rows allow more freedom to the plant, and it facilitates hoeing, but there is more economy of space

in double rows. Single rows should be 2½ feet wide, and double rows 1 foot wide, with a space of 3 feet between each double row, in order to get up and down the bed. In the rows the stocks should be set 1 foot apart.

It is a mistake to plant deep; dwarf stocks should not be planted more than 4 inches below the surface. After planting, round up the earth about them in a ridge, like earthing up potatoes: it tends to keep the bark of the stem soft, and easy to separate from the wood at the time of budding. Shallow planting is the best, because all the earth down to the root has to be removed, so that the bud can be inserted in the stem as close to the root as possible; if the stock is set deep we shall find it difficult to bud low down. Before planting, the stocks should be "eyed"; that is, every rootlet springing from the stem of the stock, except the lower roots, should be carefully removed, in order to prevent top roots forming after the stock is planted.

Standard stocks should be planted in double rows, 1 foot wide with a 4-feet passage between each double row. The stocks should be set in the row 1 foot apart and 6 inches deep.

III. Budding Dwarfs

Budding is the art of inserting a small portion of the bark containing an eye of a cultivated rose in the stem of a more or less wild rose in order to multiply plants. To become a successful budder calls for such dexterity as can only be acquired after much practice. Moreover, it is an art, a process, which can be more speedily grasped by observing an expert budder at work than by descriptive writing. So the best way to learn is

to pay a visit to a rose nursery in the budding season, and receive an object lesson.

Before attempting to describe the process, let us first of all explain four of the technical terms used.

(1) *The Stock* is the rooted plant in the stem of which the rose eye is to be inserted (Fig. 13).

Fig. 13.—Dwarf Stock.

(2) *The Scion* is the shoot of the rose cut from the old plant and bearing one or more eyes (Fig. 14).

(3) *The Bud* is a piece of bark containing an eye cut from the scion, and with all the wood removed (Fig. 19).

(4) *The Budding Knife*, the only tool required, contains a small blade with which to cut the bud and make an incision in the stock, and having an ivory or bone handle flattened and pointed at the end (Fig. 15).

The process of budding dwarfs has six distinct stages: (1) Preparing the stock; (2) selecting the scion; (3) cutting and preparing the bud; (4) cutting and opening the stock; (5) inserting the bud; (6) binding up the stock after the operation. Let us consider them in order.

(1) *Preparing the Stocks.*—Draw away the earth from around the stock down to the first root. Give the stem of the stock, about 4 inches as close to the root as possible and on the side of which the bud is to be inserted, a good rubbing with a small piece of hessence, fine sacking, or any other coarse material, leaving the rubbed part quite smooth and free from earth or any other foreign substance that might enter the incision when made in the bark and come between the bud and wood of the stock, thus preventing a perfect union of bud with stock. A boy is usually sent down the rows to prepare the stocks.

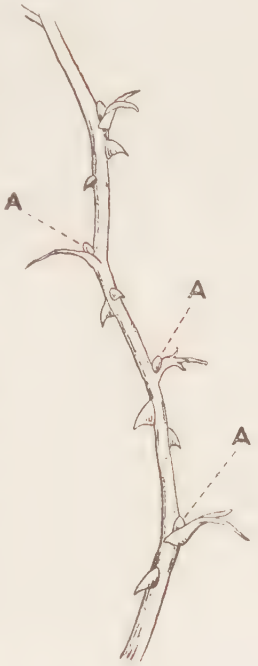

FIG 14.—Scion (A. Buds for Budding).

(2) *Selecting the Scions.*—Having previously decided the number of stocks to be budded with a certain rose, we next proceed to cut the buds. The scion containing the buds should for preference be a shoot that

FIG 15.—Budding Knife.

has recently borne flowers; this insures ripeness. If the wood is soft and immature the piece of bark bearing the

eye will be thin and tender, rendering it liable to injury by frost; on the other hand, if too ripe the sap has gone, and the wood will not separate from the bark. The state of the prickles is good evidence as to the fitness of the buds: press against them with the thumb, they should not bend, but snap off easily. The bud protected by the leaf-stalk should be neither flat nor pushing, but just plump; some varieties, however, never have plump buds while in a dormant state—Her Majesty, for instance—but these are exceptions. The best part of the shoot selected as the scion is the centre; buds at the top are inferior. Where possible select medium-sized short-jointed wood; buds from this will make less strong growth and give better flowers. Having obtained the requisite number of scions, cut off all the foliage, leaving half an inch of the leaf-stalk to serve as a shield to the eye; then remove all prickles to admit of the scion being handled freely and to prevent piercing any of the buds on other scions. These scions, which if cut from normal growth will be each a foot long more or less, should now be tied together, labelled with the name, and placed in a pail of water to await the budder; they will be all the better the next morning if cut and put in water over night.

(3) *Cutting and Preparing the Bud.*—We now proceed to the actual budding. Hold the scion upright in the left hand, palm uppermost, *as if you were cutting a quill pen;* insert the budding knife half an inch above the lowest eye and leaf-stalk, slicing downwards, dipping the blade slightly as it passes underneath the eye and bringing up again an inch below the eye, but not cutting

through the bark: hold the cut strip by pressing it between the thumb and blade, and peel it off the scion.

FIG. 16.—Bud as Cut from Scion.

The piece removed contains the bud, a thin section of wood together with a strip of bark (Fig. 16).

Now hold the bud upside down between the forefinger and thumb of the left hand, bending back the

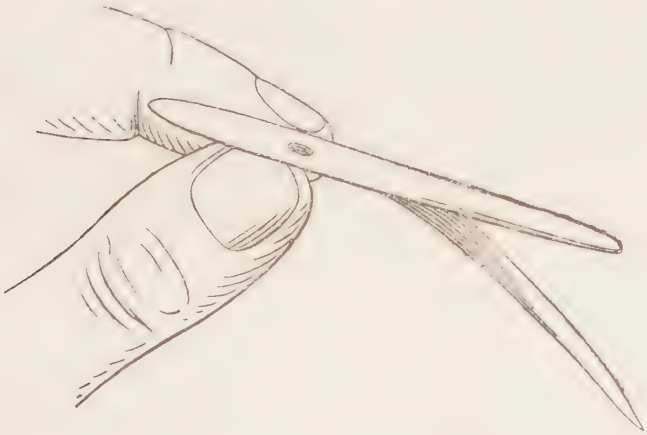

FIG. 17.—How to Hold the Bud.

strip of bark with the other fingers thus causing a slight separation of the wood from the bark (Fig. 17).

Insert the blade of the knife under the wood and with a jerk pull out the wood, leaving nothing in the bark

but the inner soft green substance of the eye level with the surrounding bark. Notice carefully that it should be level (Fig. 18). If in pulling out the wood, the soft

FIG. 18.—Bud with Wood Removed.

substance of the eye comes out as well the bud is worthless; the life has been withdrawn with the wood, the bud will not take. (The quick jerk usually breaks the hard wood from the soft part of the eye.) Cut off the lower end of the strip of bark half an inch below the eye, bringing it to a rounded point, which point will serve as a plough when we come to push it into the slit of the stock. The bud is now ready for insertion (Fig. 19).

FIG. 19.—Bud with Bark Trimmed ready for Insertion in Stock.

(4) *Cutting and Opening the Bark of the Stock.*—Stand over the stock to be budded, keeping the shoots back by the legs placed on either side. With the blade of the knife make a perpendicular cut in the bark of the stem half an inch to an inch long, commencing as close to the root as possible, and a transverse cut at the top of the

perpendicular slit, but in neither case cutting the wood. Pass the flat part of the handle of the knife down the slit, just raising the bark from the wood on both sides. The stock is now ready to receive the bud (Fig. 20).

(5) *Inserting the Bud.*—Insert the pointed end of the bud in the top of the slit and push the bud down between the bark and the wood as far as it will go, assisting it with the knife-handle where necessary. Cut off level

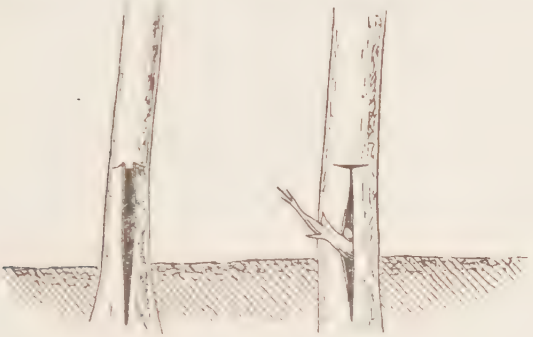

FIG. 20.—Stock Prepared to Receive Bud.

FIG. 21.—Bud Inserted in Stock.

with the transverse slit any portion of the top end of the bark that overlaps, so that it completely fills the space. Bring the two side-flaps of the bark over the bud so as to enfold it, and the operation is complete (Fig. 21).

From this description, I fear, the art of budding sounds difficult: it is not so really, but quite easy: when once the knack is acquired one could do it almost with the eyes shut. The whole process from start to finish, from cutting the bud from the scion to pressing the bark over the inserted bud, should not take more than half a minute. Celerity will come with practice.

Two essential points in successful budding should here be noted:—

(i.) *Avoid bruising the eye or any portion of the bark that is to be inserted in the stock.* To safeguard this, let the division of wood from bark be commenced on that part that will eventually be cut off, so that no inner portion of either wood or bark close to the eye is touched by the knife or fingers. Should any difficulty be experienced in the operation, and the bark bruised thereby, it is better to throw the bud away and cut another. Where the wood breaks or flakes off in pieces it shows the scion is not in good condition.

(ii.) *Cut and insert the bud as quickly as possible.* Exposure to the air is injurious to the prepared bud and stock; cut the bud first, then open the stock. In the event of the bark of the stock not readily separating from the wood, that stock will not "run"; leave it and pass to the next. When it is found that several apparently healthy stocks are in this condition give them a good soaking with water or wait for rain.

(6) *Binding up the Budded Stock.*—Take a piece of raffia grass from a bundle already cut into the required lengths, say, 12 inches, and moistened with water to make it pliable, and apply to the wound caused by the operation what is practically a bandage. Commencing at the lowest part wind the raffia tightly round the stem of the stock, taking care that it is not twisted but lies flat, and in the first turn securing one end in the same way as a surgical bandage, or as one would put a bandage to the leg of a horse. By overlapping in the first turn and keeping the raffia tight, the bottom end is held secure

and will never slip or get loose. In passing the leaf-stalk that protects the eye of the bud, bring the raffia tightly round the stem as close as possible both above and below the eye, so that the bud is almost hidden; continue winding until the slit part of the stem is completely swathed; then tuck the end of the raffia inside the last round, and pull it through straight and tight in the same direction. The bandage will now remain firmly in position; no tying is needed (Fig. 22), nor any further attention.

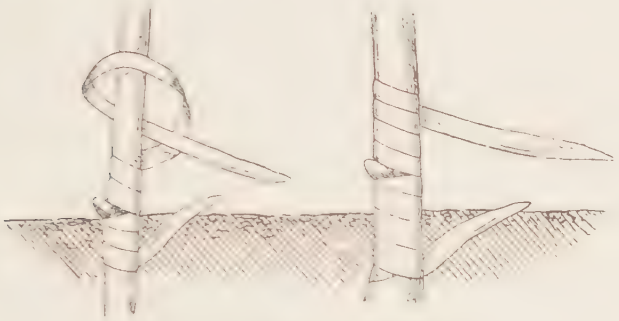

FIG. 22.—Method of Bandaging.

except to look out for suckers, until the following spring. In most instances the raffia will burst from the swelling of the stock, or rot from exposure to the weather.

In thus describing the process of budding we have supposed that one bud only is inserted in each dwarf stock; this is the general practice. But for a great many years it has been our custom, where possible, to insert two, either in two separate slits, or one bud immediately above the other in one slit. Amateurs possessing but few stocks cannot afford to risk failures, it is therefore quite advisable to have two strings to the bow. But

double budding has another advantage: the top bud is the first to move, the lower one remaining apparently dormant but nevertheless ready to grow. In the event of the first bud being checked by frost, while it is recuperating the lower bud at once begins to push forward to take its place, and little time is lost. And should there be no injury to the first bud, yet the second bud frequently starts growing some days after the first, and will thus give flowers for the later shows. Of course double budding takes more time, but not much, it is only a question of cutting two buds instead of one, and where the operator inserts two buds and ties as well the whole process should not exceed two minutes.

IV. Budding Standards

In standards the bud is inserted, not in the old wood, as is the case with dwarfs, but in the young growth of the same year as budding. The newly planted standard stock if left to itself will send out shoots all the way up the stem, but we want only the top shoots. Therefore in the spring and for some weeks after rub off or cut out all the lower shoots as often as they appear, retaining a few of the top shoots as far as possible at equal distances round the stem.

At the time of budding select three of these which are in the best condition, not too young and certainly not too old. Bud each of the three with one bud, following the same process as prescribed for dwarfs but *do not make the transverse cut*, or the shoot might break off at this point. Commence the longitudinal slit close to the standard stem; thus preventing any wild

growth from pushing up between the budded part and the standard stem. With the handle of the budding knife raise the bark on one side of the slit and slip the bud in sideways; lift the bark on the other side and slip under the other side of the bud, and the budding is completed. To enable the bud to be inserted sideways the slit should be longer than in the case of dwarfs, but how much, depends on the size of the bud.

Bandage up the operated part after the method already set forth, *using budding cotton*, not raffia. The cotton holds firmer, and will serve as a protection from winter frost; and, unless it is cutting into the shoot, should remain on until the spring, when, and not till then, the shoot bearing the bud is shortened.

It is most desirable that the buds should remain dormant until the following spring: they will then make better plants, and produce finer flowers as maidens. But it sometimes happens, owing it may be to a spell of wet weather immediately after budding, or to the eyes of the buds being in an active condition when inserted, that the buds "run out," that is they grow and perhaps flower the same year. If the budding has been done say, in June, and the buds start into growth in July or August, this will not matter, but if budded in August there is danger lest the young growth be insufficiently ripened to withstand the frost of the ensuing winter. When this is the case the growth should be slightly cut back in September in order to ripen the wood.

The after-treatment of the budded stock is dealt with in Chapter XIV.

CHAPTER XII

CUTTINGS, GRAFTING, LAYERING

I. Cuttings: (1) Cuttings under Glass; (*a*) Summer and (*b*) Autumn Propagation; (2) Cuttings in the Open: (*a*) With a Heel; (*b*) Without a Heel. II. Grafting: (1) Whip-grafting; (2) Cleft-grafting; (3) Wedge-grafting. III. Layering. IV. Suckers.

Of all methods of propagation budding is the most satisfactory, and for amateurs will meet nearly all requirements. Described in this chapter are other systems. These, however, should be regarded more or less as auxiliaries to, than as substitutes for budding.

I. Cuttings

The primary reason for raising roses from cuttings is to have them on their own roots, and it might naturally be thought that own-root roses are the best. Experience has proved, however, that although some varieties do well on their own roots, yet it cannot be said that they do better than budded or grafted on a stock, whilst the great majority of roses under cultivation really prefer to be budded. Bear in mind that roses are of the same family as apples and pears, and just as apples and pears to be successfully cultivated must be grafted or budded, so it is with roses.

Own-root roses, especially in the case of Hybrid Perpetuals, have a tendency to make growth at the

expense of bloom, and those which do best on their own roots are the species and such hybrids as are little removed from them. To grow the highly bred varieties on their own roots for exhibition is sheer waste of time and labour, since we can obtain quicker and better results both in plants and flowers when budded or grafted.

Cuttings may be struck in two ways: (1) Under glass in pots; and (2) in the open ground. The first method is pursued for highly bred or new varieties, the second for stocks, species, and strong-growing pillar roses.

Fig. 23. Cutting with a Heel.

(1) *Cuttings under Glass:* (*a*) *Summer Propagation.*—This method is suitable for all perpetuals, whether Hybrid Perpetuals, Hybrid Teas, or Teas. In a house of forced roses cuttings can be taken as soon as the plants have done flowering. Select well-ripened wood, for preference the lateral growth below the blooming shoot, one that has stopped growing and has not borne flowers. Take the cutting with a heel attached, close to the old wood from which it springs, as indicated in Fig. 23. The prepared cutting without a heel (Fig. 24) should be from 2 to 6 inches long, having three or more joints and with the top leaves left on. Place the cuttings—say, six to a 48-size pot—two-thirds of the length below the surface of the soil round the side of a pot filled with fibrous loam and silver sand in equal parts. The cuttings

should not be watered heavily, but lightly sprinkled daily for two weeks, using for the purpose a watering-pot with rose attached. If during this period signs of damping appear, and the leaves begin to decay, admit a little air to the house. At the end of the fortnight the cuttings will be ready to make roots and grow, when the pots should be removed to a frame with bottom heat.

FIG. 24.—Prepared Cutting, without a Heel.

(*b*) *Autumn Propagation in Pots.*—Although cuttings taken from forced plants strike more rapidly than those obtained from plants grown in the open ground, nevertheless, in the absence of roses under glass, or from a desire to have own-root roses of varieties grown out of doors, autumn propagation is resorted to, a method suitable alike for summer-flowering and perpetual roses.

Cuttings on this principle can be struck at any time of the year, but obviously the cooler the weather the better, say, September or October. Proceed on the same lines as indicated for cuttings taken from roses under [illegible] but since there will be less sun in these months, Perpetuals, [illegible]ttings more liable to damp off, hardly any

watering will be necessary. The cuttings must remain in the pots throughout the winter, and about the end of April should be repotted in 60-size pots. Place the pots in a cool frame, shade and syringe, and the cuttings thus treated will be ready to plant out in the open in the following autumn.

(2) *Cuttings in the Open*: (*a*) *With a Heel.*—Cuttings of strong growing varieties, such as Ramblers and Multifloras, can be taken and struck at any time between August and November; these varieties are usually thinned in the turn of the year after their flowering is over, and then is the opportunity for taking cuttings of these and other summer-flowering roses.

Select lateral growth, and take each cutting with a heel as explained above; remove all the leaves except two or three at the top, insert the cuttings 3 inches apart in a previously dug trench of light sandy soil, leaving one-third of the length of the cutting above the ground. Fill up the trench and tread firmly.

A few boughs of evergreen should be laid over the cuttings to protect them from sun and frost. Remove the covering in the spring, and in the following autumn they will be ready for transplanting. A bed of cuttings should be set out in rows, 6 to 10 inches between each row to allow for hoeing.

(*b*) *Cuttings in the Open, without a Heel.*—The following method is pursued in the propagation for budding purposes of rooted briers, Manetti and other stocks. Cuttings of hardy species and strong growing hybrids of *multiflora*, *sempervirens*, &c., may be treated in the same way.

In the autumn select the long ripe shoots, not too strong, from the heads of the recently budded dwarf stocks. Cut them into lengths 8 to 10 inches long—there will be no heel to these. Bear in mind that eighteen months more or less will elapse before they can be budded; meanwhile they will grow, and therefore it is not advisable to take the large coarse growth, which often is so full of pith as to be damaged by frost, and in any case will probably be too large to bud when the time comes. These cuttings should be cut through level at the base, and as close as possible below an eye (Fig. 24).

The soil prepared for the cuttings should, if possible, be light; where the ground is naturally heavy, sand should be liberally added to fine it down, so that it will lie close around the inserted cuttings. Open a trench 8 inches deep, and set the cuttings 3 inches apart on the side opposite to that on which the next trench is to come. Make the second trench 12 inches apart from and parallel with the first, at the same time putting the soil from the second trench into the first to cover up the row of inserted cuttings. Repeat the process with the third and following trenches.

The cuttings should be inserted so that not more than 2 or 3 inches of each appear above the level of the ground. Tread very firmly. By the following autumn the cuttings will be rooted and ready to plant out as stocks for budding the next season.

II. Grafting

Of all the methods of propagation grafting is the most expeditious, plants grafted in January coming into

flower in three or four months' time. On the other hand, they are on the whole less satisfactory than budded plants. Grafting to be successful requires much practice and more patience. Why, therefore, and by whom is grafting chiefly adopted? It is resorted to, principally, by those trade growers who desire to increase their stock of certain varieties in the least possible lapse of time. Some of the new roses distributed in pots by the raiser are cut up into a number of small scions, grafted under glass on dwarf stock in pots, and within four months a stock of plants ready for sending out is obtained.

In so far as the average amateur is concerned we might omit all reference to grafting, since for him budding is by far the best method; nevertheless, it is well to note in outline how it is done.

Grafting is almost entirely carried out under glass with roses in pots. The stock best suited for the purpose is the Manetti, because it possesses much sap, and its roots being more fibrous than the brier it is better adapted for pot culture. These stocks, averaging half an inch in diameter, should be potted up in 60-size pots, some twelve months before required for use; during this period they will become well established. As the months of January and February are the best months for grafting, the stocks should be placed in bottom heat soon after Christmas, or two weeks previous to being grafted; this will flush the sap and enable the stock to "run."

There are three ways of grafting. That most generally employed and with the best results is (1) *Whip-grafting*; a system of splicing carried out in the same way as the lash is attached to the stalk of a driving

whip. Another is (2) *Cleft-grafting*, under which process a cleft is made on the side of the stock in which the scion is placed; and (3) *Wedge-grafting*, the scion being wedge-shaped at the base is inserted in the top of the stock.

(1) *Whip-grafting.*—In the "Rose Amateur's Guide," Mr. Rivers gives a lucid explanation of this process, which, with kind permission, is here inserted.

"To prepare a young stock for grafting you must cut off its top with a gentle slope, take off with a sharp knife a slice of bark, with a *very small* portion of wood about 1½ inch in length; then take part of a shoot about 6 inches in length, and pare its lower end down quite thin till it fits accurately on the place, in *length* and more particularly in *breadth*, so that the bark on graft and stock are joined closely; bind the graft to the stock firmly with strong bast mat, which has been soaked in water, and then place clay over it, so as to leave no crack for the admission of air: presuming the stock to be in a pot, it may be plunged in sawdust or old tan, leaving two buds of the graft above the surface, in a gentle hot-bed, and kept close till it has put forth its shoots; when these are 3 inches in length, the clay may be taken off, and air admitted gradually by propping up the light; if Perpetual Roses they may be shortly moved to the greenhouse, where they will bloom in great perfection in early spring. After this first bloom their shoots should be shortened, and if required they may be planted in the open borders, where they will flower again and again during the summer: if Summer Roses they will flower but once, but they will make strong shoots and establish

themselves for another season; if a forcing-house is used instead of a hot-bed frame, they must be plunged in the same materials, as this keeps the clay moist, and generally insures success. If convenient grafting-wax, made as follows, may be used in lieu of clay: 1 lb. Burgundy pitch, ¼ lb. common pitch, 2 oz. beeswax, and ½ oz. mutton fat, melted, and put on with a brush while warm."

(2) *Cleft-grafting.*—One advantage of this method is that shorter grafts can be used. The scion in this and all other methods of grafting should be wood of the same condition as we select for budding; that is to say, the middle portion of a well-ripened shoot, avoiding if possible the extreme tip. Cut the scion into 1½ inch lengths, each length having one or more eyes, two or three preferred. Top the stock level with a sharp knife, and then with the point of the blade cut out a wedge of the bark and wood, drawing the knife down as shown at Fig. 25, but not so deep as to touch the pith. The size of the cavity should be regulated to the size of the graft to be inserted, which must be cut as shown and made to fit exactly; the success of the operation chiefly depends upon the fit, and it will be all the better if there is an eye on the side opposite to the shaved point. The bark of the graft when inserted must join the bark of the stock on both sides; to do this requires care. The graft being inserted

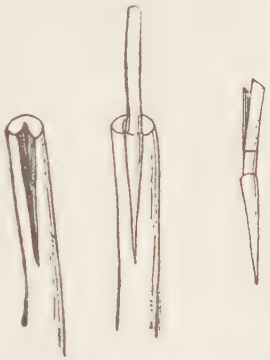

FIG. 25.—Cleft-Grafting.

the whole wound should be bound up tightly with moist raffia in the same way as described for budding, and so completely covered over with grafting-wax that the air is entirely excluded and bleeding prevented.

(3) *Wedge-grafting.*—In this process the stock, having been topped quite flat, is split at the top and the scion shaped and inserted as a wedge.

Treatment of Newly Grafted Plants.—Being brought into activity by bottom heat the shoots of Manetti on the stocks bearing the graft will appear: this is a sure sign that the sap is rising. We want to encourage it; do not at present remove these wild shoots, but merely check their growth by pinching off the tops. When the graft itself shows signs of growth all wild shoots and suckers should be cut away clean, but not before. Be careful to protect the young shoots from sun and draught, they are yet tender; but as soon as they have grown 3 or 4 inches place the pots in a cool house to harden off. The bandages may be removed when the union of graft and stock is completed, but if on examining the union it is found to be not quite healed, tie the operated part at the top and bottom.

III. Layering

Layering will be found useful in cases where from a single plant or some rare species or uncommon rose additional plants are wanted; a kind that does not throw up suckers, nor can be propagated successfully by budding. The object in layering is to bend down a shoot so that part of it passes below the surface in such

a way and under such conditions that the buried portion will strike root.

First of all prepare the soil round the plant to be operated upon as if intended to receive cuttings; that is to say, the soil should be well broken up and reduced to a fine close sandy consistency. The shoots selected for layering should be denuded of leaves three-quarters of the way up the stem, as shown in Fig. 26. Next bend the shoot down and mark the spot where it touches

FIG. 26.—Layering.

the soil; insert the knife in the stem on the side nearest the ground and immediately below an eye cutting upwards and half way through, and giving the wood a short split to form a tongue: from this tongue roots will be thrown off.

With a trowel make a hole in the ground some 4 inches deep, and put some sand in the bottom; it is on this that the prepared part of the shoot is to lie. Now lay the shoot in the hole and peg down 2 or 3 inches below the surface, leaving the split part the tongue, upright in the hole. Press the soil close

round the layer, support the end of the shoot with a small bamboo, and the operation is complete.

The best time for layering is from June to the end of August. When the layer has rooted it may be separated from the plant in November, but it is best left alone until the following spring.

IV. Suckers

Many of the species, such as *rugosa*, *alpina*, *spinosissima*, and *lucida*, together with Provence and Damask hybrids, &c., increase by throwing out suckers, springing up at some distance from the parent plant, and forming roots at the place where they bend upwards. These rooted suckers, after being separated from the plant, should be pruned back to a foot or even less, and then treated as ordinary plants.

CHAPTER XIII

RAISING ROSES FROM SEED

Hybridisation and Cross-breeding—The Reproductive Organs of the Rose—Self-fertilisation—Artificial Fertilisation—Selection of Parents—Treatment of Seed—Treatment of Seedlings.

Of all the departments of rose growing, none are more fascinating than that of raising roses from seed, and it ought to be one of the pursuits of all true rosarians who can give their time to it. However much we may enjoy the excitement of winning the chief prizes at the leading rose shows of the year, it may be the result of our own cultural skill, but it is won with other people's roses. Whereas the production of a new rose to which is awarded a gold medal is not only a joy to the raiser, but he becomes a benefactor to the whole rose world.

Hitherto the raising of new roses has been left almost entirely in the hands of a few trade growers, British American and Continental. But why should not the amateur share in this work? If the daffodil and chrysanthemum world, for example, has been enriched by the labours of the amateur, is it unreasonable to hope that the time is not far distant when the amateur rosarian will make a similar contribution? At present the amateur rosarian little realises the amount of scientific knowledge and skill, accompanied by the many hopes, fears disappointments and pleasant

surprises, which have been called forth in the production of a new seedling rose to which has been awarded the gold medal. Let him take up hybridising and cross-breeding; take it up seriously, and he will find in it a recreation of the deepest interest.

More than fifty years ago, when treating of the Hybrid Perpetual, which was then in its infancy, Mr. Thomas Rivers made the following suggestive appeal to amateur rose-growers:—

"Raising new varieties of this family from seed presents an extensive field of interest to the amateur; for we have yet to add to our catalogues pure white and yellow and fawn-coloured Hybrid Perpetuals, and these, I anticipate, will be the reward of those who persevere. Monsieur Laffay, by persevering through two or three generations, obtained a Mossy Hybrid Bourbon Rose, and many of the finest varieties described in the foregoing pages. This information will, I trust, be an incentive to amateurs in this country. To illustrate this, I may here remark that a yellow Ayrshire Rose, now a desideratum, must not be expected from the first trial; but probably a climbing rose, tinged with yellow or buff, may be the fruit of the first crossing. This variety must again be crossed with a yellow rose. The second generation will, perhaps, be nearer the end wished for. Again, the amateur must bring perseverance and skill into action; and then if, in the third generation, a bright yellow climbing rose be obtained, its possession will amply repay the labour bestowed: but these light-gardening operations are not labour; they are a delightful amusement to a refined mind, and

lead it to reflect on the wonderful infinities of nature."[1]

The Hybrid Perpetual has apparently reached its ultimate: there may be more to come, but at any rate there are other directions in which the raiser can and is proceeding. As an instance, we can point to the new race of Hybrid Sweet-briers for which the rose world is indebted to the cultural skill of the late Lord Penzance.

To the experienced hybridist the following remarks will appear elementary. He will, I hope, overlook their shortcomings, and bear in mind that they are written by a novice for novices. The writer's aim is to give a simple outline of a great scientific subject, sufficient perhaps to stimulate and guide a comrade in his first attempts in hybridisation and cross-breeding.

Hybridisation is the intermixture of species of wild roses so called the result being that we not only obtain variation, but in many cases more luxuriant growth and an improved constitution, better able to resist cold than the parent species. Herr Max Leichtlin[2] in dealing with species of plant growth in general, lays down these principles as holding good in the majority of cases of hybridisation:—

"(1) The female parent gives to the offspring the form and shape of the flowers, also certain qualities.

"(2) The male parent gives more or less the colouring of the flower, and if it is richer and freer flowering than the female, this property is transferred to the offspring.

[1] "The Rose Amateur's Guide." Thomas Rivers: 1867.
[2] "R.H.S. Report of Conference on Hybridisation." 1899.

"(3) Artificially produced offspring give larger flowers than either of the parents.

"(4) The more distant the habitat of the species intended to hybridise, the more difficult they are to take each other's pollen.

"(5) The offspring becomes infertile and delicate if the form of the flower of these parents is widely different in shape and outline."

These principles, however, should be accepted with some reserve; with the exception of No. 4, their correctness is challenged by some hybridists, and, moreover, they relate to hybridisation in general, not specifically to rose species. It is a universal rule that the character of the parent is always changed when impregnation has been successfully performed, and, therefore, if we are guided by these statements we may reasonably expect an improvement in the offspring. Should, however, the seedling be identical with the rose that bore the hep, it is an evident indication that, notwithstanding our efforts, the seedling is the result of self-fertilisation.

Cross-breeding differs from hybridisation in that it is the intermixture of those varieties which have resulted from previous hybridisation; the crossing of one cultivated variety with another. This is the method by which those new exhibition and most of the dwarf garden roses sent out year by year are raised.

The Reproductive Organs of the Rose.—But whether we turn our attention to hybridisation or cross-breeding, the process, simple in itself, is the same; it is the artificial transference of the pollen of one kind of rose to the stigma of another kind. Before proceeding with the

description of the process let us clearly understand the structure of the rose relative to the organs of reproduction.

The *calyx* (*a*) of a good rose is usually urn shaped; this eventually becomes the hep. From the outline of

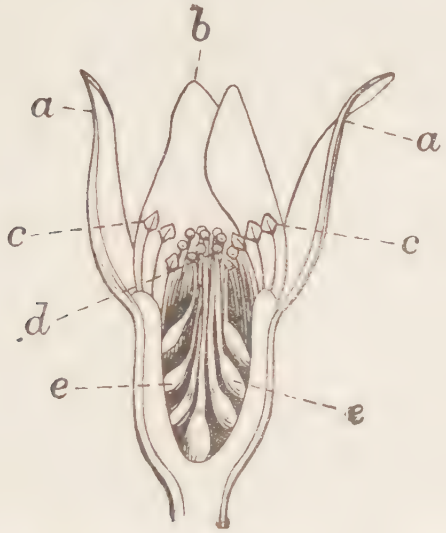

FIG. 27.—Section of a Rose, showing Principle of Fertilisation.

(*a*) calyx; (*b*) petals; (*c*) stamens and anthers; (*d*) styles and pistils; (*e*) pericarps or seed cases.

this calyx a practised hand at raising seedling roses will not unfrequently determine even before it flowers whether or not the seedling is worth propagation. The calyx, together with the *petals* (*b*), forms the protecting cover to the more delicate reproductive organs. Springing from and round the sides of the calyx at the upper part are the *stamens* (*c*). On the

head of each stamen is an *anther* (*c*) which contains the powder called pollen. The office of the stamens is to fertilise; notice how for this purpose they turn inwards. In the centre and at the base of the calyx lie the ovaries, each contained within a *pericarp* (*e*), from which ascend hollow tubes called *pistils* (*d*). These pistils terminate in a point called *styles*, which when ripe for impregnation expand, and are then crowned with viscid surfaces termed *stigmas*.

The process adopted in fertilisation is to apply the pollen of the stamens to the stigma of the pistil, whereupon the pollen emits certain potent germs, which, passing gradually down the pistil tube, eventually reach the ovary within the pericarp, when fertilisation then takes place and the seed is formed.

Prevention of Self-fertilisation.—From the formation of the flower, from the way the stamens surround and incline towards the pistils, it is clearly seen that nature provides for self-fertilisation; and it has been ascertained that the stigma has a very decided preference for the pollen of its own flower, or for another of the same sort rather than the pollen of a different variety. This preference is known as "elective affinity." Now the object of the hybridist is to impregnate the flower with pollen taken from some other rose in order to obtain variation in the next generation; but by reason of this elective affinity, unless the stamens of the rose on which he wishes to operate are removed before they burst and shed their pollen all his efforts at cross-fertilisation will be frustrated.

And not only must we remove the stamens, but we

must guard the stigmas from contact with stray pollen, especially from flowers of the same variety conveyed by wind or insects, the desire of the rose for its own or similar pollen being very great. For remember, fertilisation is not accomplished at the moment of impregnation or the pollination of the stigma, but only when the germs discharged from the pollen have descended the pistil tube and reached the ovary. From this it is evident that it is of the very first importance in successful cross-breeding to isolate the stigma from its natural pollen and from further injury after artificial impregnation has been performed.

This leads on to the question as to the best place in which to conduct our operations; should it be done in the open or under glass? Elective affinity supplies the answer. We see how easily on account of this force, nature can intervene and upset our plans; what chance, therefore, have we of obtaining a really good pedigree seedling from two highly bred parents if we fertilise roses in the open? All the best British-raised roses are now raised under glass where not only are the heps more perfectly ripened but where the plant when worked can be more effectively protected from accidental or self-fertilisation.

Artificial Fertilisation.—A house airy and light should be provided, and so arranged that the plants may be as near the glass as possible. The plants, established in pots, should be maintained in medium growth. We are not growing for exhibition; and as with cattle so with roses, high feeding is not conducive to fertility. No forcing is necessary: a gentle heat of about 40 to 50

degrees, varying, of course, with the outside temperature, is all that is required. As the plants come into bloom, the atmosphere should be kept as dry as possible. When the flower designed as the seed parent is sufficiently developed for the stamens to be formed, then, with a pair of sharp scissors, cut a slit down the petals, or remove them all, and tip all the stamens in order to destroy the anthers. In so doing, be very careful not to injure the pistils; a watchmaker's magnifying glass will be of great assistance in this delicate operation. We now await the maturity of the stigmas. Meanwhile, to protect them from foreign influences, the head of the rose-flower should be enclosed in a bag of muslin or any similar material. When the flower is about three parts blown, the stigmas will be covered with a sticky substance, an indication that they are ready to receive the pollen.

The pollen of the other rose-parent must be watched for just as diligently as we watched for the maturing of the stigmas of the seed-bearing parent. When the anthers are seen to be covered with fine particles of golden dust, easily detectable, we know that the pollen is ripe. This may be applied direct to the seed-bearing parent, by pinching off the anthers with the aid of a pair of tweezers, and placing them on the stigmas; or the pollen may be removed on a camel's-hair brush, the pollinated brush being kept a few days in a quill or glass tube until the stigmas are quite ready. For the operation, choose in preference a bright sunny day, because on such days as these the stigmas are in the best receptive condition. Apply the pollinated brush to the stigmas, repeating the process, if possible, two or

three times in the course of the day; replace the muslin bag after each application.

Registration.—We shall naturally wish to keep a record of all the roses thus artificially crossed. A notebook, therefore, should be at hand, in which to note down under a given number the name of the seed-parent and the name of the pollen-parent. For example, if a particular crossing was the tenth operation in the year 1907, the number in the note-book giving the parentage would be 10/07. Thus the hep receives a duly registered number; a tally bearing this number should be affixed to the stem and all through the succeeding stages of its future life from hep and seed, from seedling to the budded plant, until it may be found worthy of a name the rose will bear this registered number. And this registration of pedigree is all the more necessary if, in raising roses from seed, we intend to proceed not on haphazard but scientific lines; for as in the animal kingdom so with roses, the principle of heredity plays an important part in the perfecting of the breed. We want to breed *through* the seedling, even to the second and third generation—from parents to grand-children so to speak—and therefore we ought not to discard a seedling because of its supposed inferiority, but should use the seedling as one of the parents for the next cross in the hope of obtaining good offspring in the next generation. That is to say, the raiser, to obtain the best results will inter-breed with his own crosses, and to do this intelligently he must keep a register.

And here it will be well to insert some interesting and valuable hints by Mr. Isaac Anderson an authority in

his day on the fertilisation of plants in general, as quoted by Lindley.[1] It will not escape notice how emphatically he insists on safeguarding artificially fertilised flowers of all kinds from foreign or self-fertilisation:—

"To those who would attempt the hybridising or cross-breeding of plants, I will now offer some suggestions for their guidance. It is an essential element to success that the operator be possessed of indomitable patience, watchfulness, and perseverance. Having determined on the subjects on which he is to operate, if the plants are in the open ground, he will have them put into pots and removed under glass, so as to escape the accidents of variable temperature—of wind, rain, and dust, and, above all, of insects. A greenhouse fully exposed to the sun is best adapted for the purpose, at least as regards hardy and proper greenhouse plants. Having got them housed, secure a corner where they are least likely to be visited by bees or other insects. The plants which are to yield the pollen, and the plants which are to bear the seed, should be both kept in the same temperature; but where this cannot be managed, pollen from an outside plant, in genial summer weather, may be used, provided it can be got; for there is a class of insects which live exclusively on pollen, and devour it so fast after the pollen-vessels open that, unless the plant is under a hand-glass (which I would recommend), it is scarcely possible to get any pollen for the required purpose. To secure against chances of this nature a sprig with opening bloom may be taken and kept in a phial of water inside, where it will get sufficient sun to ripen the pollen. But here, too,

[1] "Theory and Practice of Horticulture." Lindley: 1840.

insects must be watched, and destroyed if they intrude. An insect like, but smaller than the common bee, which flits about by fits and starts on expanded wings after the manner of the dragon-fly, is the greatest pest, and seems to feed exclusively on pollen. The hive-bee, the bumble-bee, and wasp give the next greatest annoyance. All these may be excluded by netting fixed over apertures from open sashes or the like. Too much care cannot be bestowed on excluding these intruders, whose single touch, in many cases might neutralise the intended result; for the slightest application of pollen native to the parent plant is said by physiologists to supersede all foreign agency unless perhaps, in the crossing of mere varieties; and the truth of this observation consists with my own experience. Without due precaution, now, the labour, anxiety, and watchfulness of years may issue in vexation and disappointment. As a further precaution still, and to prevent self-fertilisation, divest the blooms to be operated on not only of their anthers but also of their corollas. Remove also all contiguous blooms upon the plant, lest the syringe incautiously directed, or some sudden draught of air, convey the native pollen and anticipate the intended operation. The corolla appears to be the means by which insects are attracted: and though when it is removed the honey on which they feed is still present, they seem puzzled or indifferent about collecting it: or if haply they should alight on the dismantled flower (which I have never detected) the stigma is in most cases safe from their contact. It will be days—probably a week or more, if the weather be not sunny—ere the stigma is in a fit condition for fertilisation. This is indi-

cated in many families, such as Ericaceæ, Rosaceæ, &c., by a viscous exudation in the sutures (where these exist) of the stigma, but generally covering the entire surface of that organ. In this condition the stigma may remain many days, during which fertilisation may be performed; and this period will be longer or shorter as the weather is sunny, or damp, or overcast. . . . As to the proper time and season best adapted for such experiments, a treatise might be written; but here a few remarks must suffice. As for the season of the year, from early spring to midsummer I would account the best period: but, as I have just observed, I regard all cold, damp, cloudy, and ungenial weather as unfavourable. On the other hand, when the weather is genial, not so much from sun heat as at times occurs from the atmosphere being moderately charged with electricity, when there is an elasticity, so to speak, in the balmy air, and all nature seems joyous and instinct with life, this, of all others, is the season which the hybridist should improve, and above all if he attempt muling [cross-breeding]. The hybridist should be provided with a pocket lens, a pair of wire pincers, and various coloured threads. With the lens he will observe the maturity of the pollen and the condition of the stigma, whether the former has attained its powdery, and the latter (if such is its nature) its viscous condition. If he find both the pollen and the stigma in a fit state, he will, with the pincers, apply an anther with ripened pollen, and by the gentlest touch distribute it very thinly over the summit of the stigma. The operation performed, he will mark it by tying round the flower-stalk a bit of that particular coloured silk thread which he wishes to indicate

the particular plant which bore the pollen, and at the same time tie a bit of the same silk round the stem of the latter, which will serve till recorded in a notebook, which should be kept by every one trying experiments on a large scale.

"It is quite unnecessary to offer any directions as to the results to be effected. If it is desired to reproduce the larger, finer formed, or highly coloured bloom of a plant having a tall, straggling, or too robust a growth, or having too large, or too coarse foliage in a plant without these drawbacks, I need not suggest to select, in another species of the same family, a plant of an opposite character and properties—say, of dwarf compact growth, handsome foliage, and free-flowering habit; and if such can be obtained, work with it, making the latter the seed-bearer. Or if it be desirable to impart the fragrance of a less handsome kind to another more handsome, I would make the cross upon the latter. I cannot speak with certainty from my own experiments how far perfume may be so communicated: but I have some things far advanced to maturity to test it: and I hope that fragrance may not only be so imparted, but even heightened, varied, and improved. Or if it be desired to transfer all or any valuable property or quality from a tender exotic species to a native or hardy kind, work upon the latter; for so far as constitution goes, I agree with those who hold that the female overrules in this particular."

This question of the influence of sex upon the offspring still remains debatable. In hybridising from species certain results have been ascertained, but in cross-breeding the influence of heredity rather than sex seems to prevail. Although we are aware that each ovary

is a separate organism, and has had to be separately fertilised, yet all the pistils in the calyx have received the same pollen, and therefore it is a remarkable fact that no two seeds from the same hep of an artificially fertilised flower produce exactly the same results.

Selection.—As regards the selection of parents, the chief seed-bearing parents to which the great class of Hybrid Perpetuals owes its origin are Gloire des Rosaménes, Générale Jacqueminot, Charles Lefébvre, Jules Margottin, and Victor Verdier, with La Gloire de Dijon, Safrano, and Devoniensis as the progenitors of the Teas. Other varieties which have been found useful at the commencement of operations are:—*Hybrid Perpetuals:* Marie Baumann, Mrs. John Laing, Ulrich Brünner, Suzanne Marie Rodocanachi, Victor Hugo, and Frau Karl Druschki. *Hybrid Teas:* La France, Captain Christy, Viscountess Folkestone, Caroline Testout, Ben Cant, Mrs. W. J. Grant, Bessie Brown, and Kaiserin Augusta Victoria. *Teas:* Comtesse de Nadaillac, Souvenir d'Elise, Catherine Mermet, and White Maman Cochet. These are nearly all exhibition roses.

As an index of what may result from cross-breeding, the following examples, amongst others, given by Mr. W. Easlea [1] may be useful:—

Seed Parent.	Pollen Parent.	Offspring.
Générale Jacqueminot.	Victor Verdier.	Charles Lefébvre.
Multiflora.	Générale Jacqueminot.	Dawson Rose.
Jules Margottin.	Madame Vidot.	John Hopper.
Victor Verdier.	Safrano.	Captain Christy.
Devoniensis.	Victor Verdier.	Lady Mary Fitzwilliam.
Devoniensis.	Souvenir de la Malmaison.	Souvenir de Paul Neyron.
Gloire de Dijon.	Madame Falcot.	Hon. Edith Gifford.

[1] "The Hybridisation of Roses." N.R.S. Prize Essay.

With reference to garden roses, the new *multiflora* hybrids open out a wide field for experiments, especially as there are indications of a fresh break—perpetual-flowering pillar roses, Thalia Remontant and Trier being the first. Cross the Multifloras and Wichuraianas with Hybrid Perpetuals and Hybrid Teas, and should the first results fail to produce perpetuals, do not be discouraged but cross these seedlings and in their offspring our object may be attained.

Treatment of Seed.—A seed is a reproductive offspring of the parent plant, possessing within itself a germ of life which, after arriving at maturity, may remain dormant for years or may be called into activity at the earliest possible moment. Dryness delays this activity, moisture hastens it. The cause of inactivity is the superabundance of carbon which, while serving as a preservative of life prevents that life from development. Before the seed can grow the greater part of the carbon must be thrown off in the form of carbonic acid gas and to effect this a supply of oxygen is necessary. But the seed cannot obtain sufficient oxygen to do this because it is enveloped in pulp and encased within the thick skin of the hep, so the first thing to be done as soon as the hep is ripe is to liberate the seeds from the hep, and either sow at once—the better plan—or keep the seeds moist in damp fibre or sand for a time. Mice are passionately fond of rose seed; it is therefore not advisable to sow it in the open ground but in pots under glass, where it will be better protected from mice and other foes. Each seed should be sown separately, not sprinkled or rough

cast over the surface, but laid at equal distances from the others, and then covered with half an inch of soil, and the pot labelled with the registered number.

The soil should be light and well drained, for aeration is essential; it should not be allowed to become hard or caked either from insufficient moisture or from being watered too heavily. What has been previously stated in the chapter on soils with reference to the action of water as the messenger boy holds good here; water conveys oxygen and hydrogen to the seed by which the excessive carbon is speedily liberated. When a sufficient amount of this has been thrown off the seed germinates, heat sets the vital parts in action, and the seed proceeds first to throw a radical or rootlet downwards, and then to send a stem upwards, which, pushing through and above the soil to about 2 inches, terminates in two rudimentary leaves not unlike mustard and cress, but bearing no resemblance whatever to rose foliage.

At this stage great care is necessary to prevent damping off, and to guard against attacks from such pests as slugs, woodlice, green-fly, and mildew. Should the seedlings come up too close together it is advisable, after they have developed the third leaf, to prick them out separately into small pots.

Treatment of Seedlings.—Seed sown in the autumn will, for the most part, germinate the following spring; some, however, will lie dormant for another year. As soon as the seedling has made its first growth, and is sufficiently ripened, no matter how small the wood may be, it should be cut up, and every eye budded;

so much the better if the seedling bears a flower bud, since by the shape of the calyx as well as the foliage we may hope to ascertain its value.

As to the stock: since the buds from seedlings will naturally be very small, it is not well to have the stocks too large; ordinary Manetti cuttings will probably be so; medium-sized brier cuttings or seedling briers are preferable. These stocks may be grown in pots so as to be ready for those seedlings which mature early, but by far the best plan is to grow them in the open, when they may be budded in the summer.

It, however, may be asked, why take the trouble to bud a seedling before you have seen it flower, or at any rate know whether it is worth propagating? The reason for doing so is this: the quality of a seedling cannot be accurately gauged in its early state. There are certain secretions necessary to its full perfection which are developed gradually as the seedling grows in age, and until this period is reached we can never be quite sure as to its possibilities. Naturally we must expect many failures, and some eminent raisers are satisfied if only two per cent. of the seedlings propagated turn out well, and once more let us remember that in the first crop of seedlings we are laying the foundation for further developments; it is from the seedlings of seedlings that we may look for fresh breaks, and therefore the least promising seedling may become a parent of most beautiful offspring.

CHAPTER XIV

GROWING FOR EXHIBITION

Staking and Tying Dwarf Maidens—Staking and Tying Standard Maidens—Thinning—Disbudding—Tying the Blooms—Shading.

As has already been stated, roses are classified under two distinct heads: (1) Roses whose value lies in the specimen bloom, and (2) roses wherein masses of flowers are the chief feature. In order to distinguish the one from the other, the roses of the former class are technically termed "exhibition" roses, and those of the latter "garden" or "decorative" roses. But one must admit that this nomenclature is faulty, and to the uninitiated somewhat misleading, because both classes are exhibited at the rose shows, and a so-called "exhibition" variety is often equally suitable for the garden and house decoration. No true rosarian, whether he be an exhibitor or non-exhibitor, will be content with inferior flowers; his appreciation of the beautiful will not permit him to sacrifice quality for quantity. He will not therefore grow roses of the exhibition section and expect from them a mass of flowers; if he does he will certainly be disappointed. With reference to those varieties whose beauty lies in the individual blooms, the difference between the exhibitor and non-exhibitor is this: the chief object of the exhibitor is to have specimen flowers during the exhibition season—if the variety gives him

a second or third crop of roses so much the better, but it is not the first consideration; whereas the non-exhibitor desires first and last to have specimen blooms throughout the summer and as late in the autumn as possible. The point of difference then lies in the kinds to grow; the treatment in both cases will be the same. So let not the non-exhibitor imagine that the following observations do not concern him; both have the same object in view, the production of specimen blooms.

I. Staking and Tying Dwarf Maidens

Dwarf stocks budded the previous year should be topped before the sap rises, say, early in February, to prevent bleeding. The stem of the stock should be cut through an inch above the dormant bud, and then as spring advances the buds will begin to swell and push; this is termed "breaking." As soon as possible after topping the stocks a stake must be affixed to each in readiness to support the shoot when it begins to grow. For the first twelve months the shoot of a newly budded rose, the maiden growth, is weak at the junction of bud with stock, and unless artificially supported will come off the stock. The best stakes are bamboo canes 4 feet long and ½ inch in diameter; they last longer and are neater in appearance than wooden stakes. If the stocks have been planted in trenches as already advised, the roots for the most part will be spreading the same way, and therefore the bamboo should be set close to the back of the stock away from the roots to avoid injuring them. As soon as the buds after breaking have grown about

4 inches, these shoots should be secured to the bamboo stake with raffia. This is the first tie; be very careful not to press the shoot, it is very tender. Each plant in the process of maiden growth will require a second tie; many will need a third. In the second and third tie do not tie the shoots close to the bamboo, but allow sufficient freedom for extension, light, and air, for remember our object in tying is obtained if we preserve the shoot from strain at its junction with the stock. Nor should the shoots be tied round high up to the foot-stalk of the bloom, because the raffia will be in the way, and probably have to be severed when we come to cut the rose. In tying maidens pass one end of the raffia once round the bamboo, and holding it there bring the other end round the shoot or shoots as the case may be, tying the ends close to the bamboo. Passing the raffia round the bamboo prevents it from slipping, and enables the tie to be firmly made.

II. Standard Maidens

Here it is the lateral, the branch and not the stem, that bears the dormant bud, and laterals of standards should not be shortened so close to the bud as in the case of dwarfs; 6 inches of wood beyond the bud will be close enough for standard maidens. Let us understand why. Standard stocks are in these days used by exhibitors principally, nay, almost wholly, for Teas. Dormant buds of Teas or standard stocks do not break so readily as buds on dwarfs; they remain dormant some time after the shoot of the stock has been shortened.

We must encourage them to grow: we must encourage the sap to run up and beyond the dormant bud, and allow it to feed a wild bud. After the stock has been shortened of its branches and begins to push out wild growth, keep this growth down on the main stem, but for the present allow some of it to remain on and beyond the shoot that bears the bud. The sap will continue to flow up, and in feeding this wild growth will feed the dormant bud also. After a week or two, or as soon as the bud shows signs of activity, the remaining wild growth should be removed: it has done its work, it has attracted the sap to rise: the sap will support the bud. There are exceptional cases, and the weather has also some influence, and so where under this treatment the bud still refuses to break, we must then resort to stronger measures: we must remove all wild growth without waiting for the bud to break.

As with dwarf maidens so with standards, the young shoots must have support. This is given by attaching a short stake about 18 inches long to the top of the standard stem. An old dead standard stock cut into lengths and shaved flat for a few inches on one side at the end to be tied to the standard makes a good support. Place the flattened end against the standard and tie in two places 6 inches or so distant the one from the other. This support must be made quite firm, and extend a foot above the top of the standard, and to this the maiden shoot as it grows should be tied in the same way as has been described for dwarfs.

III. Thinning-out the Shoots

This applies to cut-backs not maidens: it is the first operation to be performed after the pruned roses have started into growth. The object we have in view is, obtain a few strong shoots instead of many weak ones. We prune to excite growth. But if after pruning we left the plant alone we shall find that the energy of the plant is diffused in supporting many weak shoots, not concentrated in producing a few strong ones. If we interfere with nature by pruning, we must interfere again by thinning.

As soon as the pruned plant begins to break, and before the foliage is formed, it will in many instances send out two and perhaps three shoots from a single eye, one of them, usually the centre one, being the strongest; this is the shoot to leave, the others must be removed. When the young shoots have burst into leaf and are from 3 to 6 inches long, some more thinning must be done: and here comes the question, "How many are we to leave on the plant, and which?"

Now this question cannot be answered offhand; the number of shoots a plant can carry depends so much on the variety and its condition that no positive direction can be given which will be equally applicable to all—a strong growing variety will carry more shoots than a moderate one—but, speaking generally, it will be found that from three to six shoots are quite sufficient for any two or three-year-old plant of an exhibition rose to maintain. As to which shoots should be removed the first point to be borne in mind is that the shoots left on should, as far as possible, be equally distributed around

the plant: all the shoots springing from the centre and those that cross one another should come off, in order to admit light and air. If the plant has several shoots on last year's wood, it is well to leave not more than two shoots on each, and where left they should, if possible, be on opposite sides of the old growth not one immediately above the other.

Another thing to be borne in mind is liability to injury by frost. We selected the strongest eye when the plant first began to break, but at this later stage of growth it does not necessarily follow that the strongest shoot will be the best: shoots less advanced may be preferable. And for this reason: it not infrequently happens that the apparently strong shoot has been injured by frost: its growth has stopped: it has budded up causing new growth to rise to take its place. Therefore prior to selecting the apparently strong and forward growth ascertain whether it has been frosted, press the finger against the prickles. If the prickles are in any degree stiff and come off with a snap, we may be quite certain that the growth has somehow received a check; the shoot must be removed to give place to a younger one. Prickles on a healthy shoot at this stage of growth will be soft and bend over instead of breaking off.

Nor is it advisable, even where all the shoots are in a healthy condition, to select all of the same strength, otherwise the probability is that they will all come into flower at the same time—a thing to be deprecated. An exhibitor wants to prolong his rose season; he does not wish to have a blaze of roses all out at the same time, all over in a week. Therefore select your shoots with a view

of having a succession of flowers. If you have several plants of the same variety the season can be even more prolonged; on one plant all the strongest shoots can be left, on another medium growth only, on another the youngest, the latest of all. By adopting this method of thinning your plants will be in successive stages of advancement, and consequently your exhibition season more extended. Some rosarians, to obtain this succession of flowers, advise pruning the plants at intervals, but a fortnight or even three weeks' difference in pruning will not make much difference in the time of flowering, whereas a judicious thinning certainly will.

A word of caution before we pass to the next subject. Thinning is done in April and May, a time when much damage may be caused by frost. Therefore do not thin the plants completely in the first instance, lest the shoots left should all suffer injury by frost, but do it by degrees, leaving at first a few extra shoots that can take the place of those more advanced should they become damaged in any way; it is as well to have two strings to your bow.

IV. Disbudding

This is the next operation. In the case of roses that flower from the tip of the shoot, as do nearly all the exhibition roses, several buds are formed on each shoot; the central or principal bud and side buds. In some varieties three buds only are produced, in others as many as eight or nine. Experience proves that where they are all left on the shoot only some of these buds will flower, and those that do are comparatively poor and weak, and

hinder the perfect development of the principal bud. So that whether the roses are grown for garden purposes only, or for exhibition as well, some of the buds must be removed if good blooms are desired. This removal of superfluous buds is termed "disbudding."

In growing for exhibition it is essential to success that, in all cases most of these side buds must be removed. But the question is, to what extent shall this be done? The answer depends on the varieties under consideration. As a rule, varieties that produce globular flowers with an abundance of closely packed petals, and open slowly, will not require such extensive disbudding as those in which the flower is pointed and develops quickly. Her Majesty is a case in point; the shoot should carry at least two buds. On the other hand, with Mrs. W. J. Grant, Killarney or Bessie Brown all the buds except the principal bud should be removed as early as possible. The reason for this careful discrimination is that with some varieties, if all the side buds were removed, the principal bud would be coarse and rough, and in others if more than one bud is left, the flowers will be thin and undersized.

Disbudding should be commenced as soon as the buds are formed. For this purpose some advise the employment of a quill point, as being less liable in the process to damage the buds left on; but after a little practice, the point of a knife or later on the pressure of the finger, will be found quite as easy. A shoot should be disbudded gradually, or the plant may receive a shock, causing malformation of the principal bud; that is to say at the first operation, remove all but two—the

principal and one side bud: later on this side bud may come away if thought desirable. If there is a choice, select as the second bud one as low down the stem as possible; the top flower can then be gathered with a sufficient stem for staging purposes, without cutting the second bud at the same time.

From the date on which the plant buds, up until the time of flowering, there will be an interval of about four weeks. In the case of exhibition roses, therefore, buds formed in April, or the early part of May, will be too soon for the rose shows; it is the second bud that we shall want. If while the buds are swelling, especially in their early stage, the temperature being moist falls belows 34 degrees, the buds will probably be injured. The injury may not be immediately apparent, but if they do not turn yellow and fall off, yet when they come into flower they will probably have green centres, be quartered or irregular in outline. Here again we shall be glad of the second bud. And let us note in passing, that some varieties are less susceptible than others to damage by low temperature. We find that kinds which have long sepals, completely covering the petals from base to tip—Mrs. John Laing, for instance—are more immune from injury than varieties of the Charles Lefébvre type, where the sepals are short and the petals become exposed by the time the bud is half developed. As soon as all danger from frost-bite is over, disbudding is a simple process; before that, it requires much consideration, since we might leave a principal bud that is hopelessly damaged and have no second bud to take its place.

But how are we to know? To detect an injured bud before it opens is a matter of some difficulty, even to an expert, because the most perfect blooms of some varieties frequently appear rough by the time they are three-quarters developed. Alfred K. Williams and Helen Keller in this stage are often flat-topped, petals exposed and irregular in outline and yet will open out perfectly. Varieties that give us most trouble in this respect are pointed kinds such as Générale Jacqueminot. In order to ascertain whether the principal bud is imperfect, it will be necessary to take one and cut it through, straight across the centre, to see how the immature closely packed petals lie. If they are irregular, or in any degree confused, or the crown with the stamens is larger in proportion to the petals we know at once that when fully developed the bloom will be imperfect, and the probability is that all the other buds of the same age are likewise injured. In the case of Charles Lefèbvre or Duchess of Bedford type, a perfect bud will be globular and slightly tapering, but if shaped like a turnip the flower will be flat and coarse.

It will, therefore, be unwise to disbud indiscriminately. Before we remove the remaining side bud, and leave only the principal, we must have regard to (1) the date of bud development, (2) the weather during the period of bud growth, and (3) the variety under treatment.

All through the stage of plant growth and bud development, we must be on the alert to combat the many foes which persistently attack the rose: caterpillars, beetles, aphis, and mildew. This must be dealt with in another chapter.

V. Tying the Blooms

We now arrive at the exhibition season: a season which lasts about six weeks. Two days at least prior to the rose show our first selection of blooms should be made; we can never expect to be successful at the show if we leave this selection to the time of cutting. The first thing to be remembered is that roses, whether cut or growing on the plant, develop more quickly at certain hours of the day than at other times. This growing period is from 7 to 9 A.M., and an hour or so before sunset; at other times development is much slower. The object of selecting blooms two days before any given rose show is not to cut them, but to retard their expansion whilst on the plant; as it were, to store up roses, especially if the number of plants is limited. To do this we must resort to artificial means.

Quick development is made at the sacrifice of substance. We want to plump up the flowers whilst keeping them from opening: this assistance is given in two ways—(1) by tying up the petals of the flowers with wool, and (2) by bending down the shoot. As a general rule all blooms of Hybrid Perpetuals and many of the Hybrid Teas and Teas are greatly improved if tied on the plant; it thickens the flower and lengthens the petals. But great care must be exercised, because each variety has its own peculiarity of character and temperament, which can be ascertained only by observation.

The method of tying a flower is very simple: we take a piece of Berlin wool (white wool for preference; it does not mark the flower as some coloured ones do) and pass

it round the middle of a half-opened bud inside the outer row of petals: not tying tightly, but just pressing slightly on the petals, so that the wool will not slip off either above or below. If the shoot bearing the tied bloom is sufficiently pliable, bend it down, away from the sun and wind if possible, and attach it to a neighbouring plant or to a small stick. This bending down checks the flow of sap, retarding development, since a flower on an upright shoot expands more quickly than one on a shoot bent over and there is a further advantage: a bloom in this position is less exposed to the sun's rays and more protected from the rain. But although the process is simple, tying the petals is not always efficacious: it will be found by observation that, whilst with some roses tying the flowers is an absolute necessity if they are to be staged in their greatest perfection, with others it is quite useless and, indeed, harmful. Such varieties, for example, as Frau Karl Druschki or Mrs. W. J. Grant resent tying; it seems as if it hastens their development, for they have a tendency to fly wide open soon after the ties are removed. With some of the dark reds tying causes them to lose colour; a Maman Cochet if thus treated soon loses its beautiful pink shade. Never tie a wet flower if it is possible to avoid it. If in the early morning, it is found that the dew still hangs on the petals, wait until it has evaporated, for the colour will fly if the flowers are tied when wet. Go round and catch the young blooms in the early morning before the growing time: go round again in the evening. Commence tying the flowers two days before the show, and continue it at intervals. It will doubtless be found when the time

for cutting comes that some of those tied so long beforehand are too old or off colour to be of any use, but it depends a great deal on the weather.

VI. Shading

Every tied flower should be shaded to protect it from sun and rain. For dwarfs, West's Rose Protector (Fig. 28) will be found very convenient; it is quickly adjusted to the required height, and when the season is over, the cones being detachable from the stakes, can be easily stored away in a small compass. Straw hats, called "Zulus," purchased by the dozen or gross at a very cheap rate, make good shades; cover them with white calico or similar material that will keep out the rain, run a wire round the brim to preserve the shape, and fix them to what is termed by builders a double lath. Several of the best show varieties are impatient of wet; they lose colour become spotted, and the outer petals decay; the flowers must be grown under shades long before the time for tying arrives—Mildred Grant, for instance. Where, as in the case of a plant of Bessie Brown, there are several buds close together, a sunshade covered with white material and tied to a stake will protect them. Indeed, for a row of Bessie Brown sunshades and umbrellas should always be ready at hand in case of rain. For standard Teas larger sunshades and umbrellas

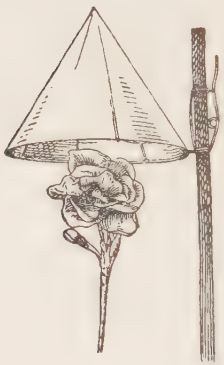

Fig. 28.—West's Rose Protector.

covering the whole tree are useful. For Teas, butter paper, being impervious to wet, may be substituted for tying with wool. The paper is wrapped round the bloom in the shape of a horn projecting well beyond the flower, and tied round the foot-stalk: it may be put on the bud when in the early stage, and left for days. Care should be taken not to leave the paper horn upright; the shoot of a papered flower should be bent over and tied as described above. Papering keeps the petals clean and the blooms pointed, but it takes time, is troublesome to do, and hinders inspection of the flower: nevertheless, in unsettled weather, it is a good method of protection, especially for certain varieties.

Some Irish growers use inverted glass plum jars secured to stakes on which they are slid up and down on the same principle as the acme shade. They are useful for some varieties provided the air is humid and there is no abnormal variation in the temperature, but if condensation is caused the water forming inside the jar will decay the petals. In England the autumn is the best time for using them.

CHAPTER XV

EXHIBITING

I. Exhibiting. II. Exhibition Roses: (*a*) Boxes; (*b*) Cutting; (*c*) Water; (*d*) Staging; (*e*) Arrival at the Show; (*f*) Dressing. III. Decorative Roses: (*a*) Cutting; (*b*) Bunching; (*c*) Packing; (*d*) Staging.

Rose exhibitions take a leading position in rose culture. They enable the general rose-loving public to see to what state of perfection the rose can be brought by cultural skill; a state unrealised elsewhere than in the gardens of a few. Rose shows place before us not only the so-called exhibition roses—specimen blooms staged in boxes—but also varieties suitable for decoration; how they may be used for the dinner table, drawing-room, bouquets, button-holes, and many other purposes. No matter how intense our love for the rose may be, so intense that it cannot be increased, nevertheless, a visit to a rose show will educate our mind to the better appreciation of a good rose—and some rose-lovers lack that appreciation—and introduce to our notice those many new varieties of whose existence we should not otherwise have known.

And for the grower who exhibits, especially if he tends them personally, there is a fascination in growing roses for exhibition which cannot be described in words; it is a delightful hobby. And, moreover, it is a fallacy to imagine for one moment that where roses are grown

primarily for exhibition the general effect of a rose garden is sacrificed, because you will find as a rule, that those who cultivate roses for exhibition have the best rose gardens. It is not in an exhibitor's garden that we find worn-out rose plants sustained solely by surface roots; bushes of Manetti, the stocks of some starved-to-death variety; inferior sorts, long since discarded elsewhere or pillar roses struggling in vain to recoup themselves from the ravages of the knife. No; the exhibiting grower will have the best kinds for all purposes, and will keep them at their best. He does not leave their cultivation entirely in the hands of a gardener but is usually himself the gardener, and puts his heart into the work. By frequent attendance at rose shows, by moving more or less in rose-growing society, and by the medium of rose literature he will keep pace with the times, and decorative as well as exhibition roses, summer-flowering species and good autumnals, will all find a place in his garden: a place, moreover, to themselves, not sharing the border with stifling herbaceous plants or rapacious shrubs, but beds and borders, a section of the kitchen garden, or a piece taken in from the home meadow dedicated solely to the rose.

A grower for exhibition if he would attain to the first rank must be observant and patient, take the utmost pains from start to finish, attend to details, and sternly resolve that in all things and at all times self shall be subservient to his roses. He must not expect to win a prize at his first show; he attends that in order to learn, to pick up hints, to note how others with more

experience stage their blooms, the boxes and tubes they use, and the way in which the flowers are prepared for the inspection of the judges. All this and more is greatly a matter of experience; it cannot be acquired from a book, but the few hints and suggestions contained in this chapter, inadequate as the writer feels them to be, are set down with a view of giving a beginner some slight assistance. To the practised hand they are unnecessary; he probably will be inclined to criticise.

II. Exhibition Roses

Rose Boxes.—Boxes in which to stage exhibition roses should be made as light in weight as is compatible with durability to stand the wear and tear of railway travelling. The importance of light boxes will at once be apparent when the exhibitor sees his boxes on the weighing machine at the railway station, and payment for excess is demanded. The best material is light pine. The box should be clamped at the corners, top and bottom, with iron bands; the handles at the ends of the box should be large enough to admit the whole hand, and the handle-bars convex in the centre, not a thin straight bar, affording a better grip, and will not cut the hand. Hasps, like the handles, should be placed at the ends; one hasp for a six or twelve box, but two for boxes of eighteen or twenty-four. Two hooks and eyes, provided the hooks are quite flat, may be fixed to the front for extra security to the lid, but otherwise the long sides of the box back and front, together with the top of the lid, should be perfectly flat to insure the boxes being packed close together and ride steady in the van.

As to the size of the boxes: the usual number of blooms in the exhibition rose classes are six, twelve, twenty-four, and thirty-six, the last number are staged in two boxes, each containing eighteen flowers, and although the exhibitor in his first year will probably content himself with a stand of six or twelve, we here give the regulation size for all rose boxes; the size required at all exhibitions held by the National Rose Society and affiliated societies. The regulation is as follows:—

"All blooms exhibited (except where specially directed in the schedule to be shown in vases or otherwise) must be staged in boxes of the regulation size viz. 4 in. high in front and 18 in. wide, and of the following lengths (all outside measurements): For 24 blooms, 3 ft. 6 in. long; for 18 blooms, 2 ft. 9 in. long; for 12 blooms, 2 ft. long; for 9 blooms, 1 ft. 6 in. long; for 6 blooms, 1 ft. long; for 8 trebles, 3 ft. 6 in. long; for 6 trebles, 2 ft. 9 in. long; for 4 trebles, 2 ft. long."

It will be noticed that the foregoing regulation deals only with the box, not the lid, and with the depth in front; it states nothing more. Old-fashioned boxes were made sloping; higher at the back than in the front, with a corresponding slope in the lid to bring the whole level, but it is best to have the box of a uniform depth back and front. The lid of the box should have a depth of 9 inches to allow room for the large pointed blooms and for air space, because the flowers will travel better if not set up close to the lid. The lid is attached to the box by sliding hinges or butts, of which there are

several kinds: the best is that which has one point slightly longer than the other, so that when sliding on the lid the point of one butt reaches the socket before the other, not both at once. At each end of the lid a hole, 7 inches by 2½, is usually cut for ventilation, and covered on the inside with perforated zinc to keep out the dust. The box should be painted dark green, and, where the exhibitor has several boxes of the same size, it is advisable to put a distinguishing mark or figure on both box and lid, it saves time in finding the right lid for the box. It is an unnecessary trouble to paint the owner's name on the lid: all that is required is to have a few paper slips printed thus:—"*Flowers in Water: Keep Level*," adding in the corner in smaller type the surname of the exhibitor and the name of his railway station. A suitable size for these printed slips is 15 inches by 7. These should be pasted on the lid in preparation for a journey by rail. Inside the box is fixed a flat board with holes in which the tubes are placed; such boards hold the tubes firmer, and are lighter than shavings with which boxes are sometimes packed. On this board the moss is laid.

As to the tubes, there are several kinds in use, each possessing some good feature, but since there are none quite satisfactory, the selection must be left to the exhibitor. Foster's tubes and rose supports (Fig. 29) are very generally used. As will be seen by the illustration, the tube consists of an outer tube containing the water and a hollow inner tube in which the rose and its wire support is fixed. By this arrangement the flower can be changed without removing it from

the tube. It is better, however, to close up the bottom of this inner tube and let it carry the water, so that when the flower is raised the water is raised at the same time.

Roses being of a fleeting character, it is always necessary for the exhibitor to provide himself with extra blooms to replace faulty ones when setting up the roses at the show: he must have a spare box. This need not be mossed; a rhubarb leaf or newspaper spread over the board before inserting the tubes, to serve as a protector from dust, will do quite as well. If, however, the exhibitor is staging many roses, he should have a spare box made specially for the purpose. Such a box as follows can be recommended: Material light deal, unpainted, size 48 by 18 inches, depth 14 inches. Inside the box, at a depth of 9 inches from the top, is fixed a board, perforated, to contain 48 tubes. A flat lid fits in to the top of the box, and is fastened by four leathern straps two on each side. Ventilating holes and handles at the ends. It is intended that the extra roses should be staged one in each tube, so that they are quite ready to be transposed, tube and all to the exhibition box if wanted.

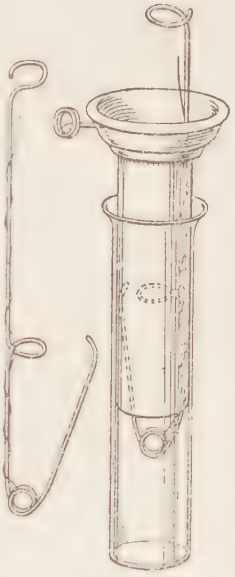

FIG. 29.—Foster's Tube and Rose Support.

By the middle of June the schedules of the rose

shows will have been received. We can then plan our campaign, compiling a list of shows to attend (Tuesdays, Thursdays, and Saturdays are usually the most convenient days), and noting the latest day for entering. It is better to enter for too many classes than to find on going over the plants on the day before the show that we could have entered for more. At the time of entering it is advisable to look out the trains and note them down on the schedule. We sometimes cannot well spare the time to do it the day before the exhibition. Always allow yourself plenty of time in catching trains and making connections. Rose boxes are not parcel post baskets; they must be handled gently.

Cutting the Blooms.—Always cut the roses over night, even if the exhibition is within driving distance, for they stand better than if gathered on the morning of the show. Morning cut roses may possibly be fresher and brighter in colour, but they are certainly less reliable than those gathered the day before. An important point to remember is this: roses should be put in water immediately they are cut, especially if the air is dry. A cut stem exposed to the air if only for two or three minutes will harden at the cut, and thus the power of the stem to absorb water is weakened if not checked outright. When roses are cut and conveyed to the staging shed in baskets the stems should be cut again before putting them in water. It is best to have a spare box with tubes filled with water, and take it to the bed at the time of cutting.

Varieties vary much as to the stage of development in which they should be cut, and although a knowledge

of this variableness is essential, it can only be gained by observation. Here, however, is an instance or two in point. Thin deep petalled roses, such as Killarney, Mrs. W. J. Grant, and Générale Jacqueminot, should be cut young; Charles Lefébvre will fly if cut very young, but full-blown flowers will often stand better than a younger bloom; the same may be said of Marie Baumann; a young half-developed flower of Alfred K. Williams, cut from strong growth or a maiden plant, will probably not increase in size, but gradually shrink, the petals losing all their stiffness. François Michelon if cut full-blown will stand well; Bessie Brown unless cut young will lose its pink freshness and be papery; Frau Karl Druschki is always on the move, is liable to show its eye quite suddenly, and yet old blooms sometimes hold in position a long time. In a word some varieties must be cut in the bud stage, others half blown, some full out.

This being so cutting for exhibition requires thought, and in order that the cutter may be free to concentrate his mind on what he is doing, it is well, especially when many roses are to be staged that he should have one or more to assist him. One assistant will have charge of the cutting-box; he will receive the cut flowers and place them in the tubes, keeping the varieties distinct so that when staging begins, the operator can, from the cutting-box, make the selection for the several stands more readily. The second assistant receives the roses as they are cut and carries them to the box. This cutting-box when full is conveyed to the staging-shed where it remains — the roses all being in water — to await the staging.

Water.—Doubtless some exhibitors may think the quality or condition of the water immaterial. It may be so; the writer here simply records his own opinion.

The quality and temperature of the water in which the roses are to be staged should receive attention. After a very hot dry day, why do the petals of some roses, especially the dark ones, curl over half-an-hour or so after being placed in water? It is owing to the water: it was too cold. Water is variable in its quality, but in our case the roses prefer well water to pond, and moderately hard to soft. Water, however, if drawn from a well should always stand, say, in a pail, for a few hours before using it. Previous to filling the tubes ascertain its temperature; this should be about 5 degrees lower than the normal temperature of the air in the afternoon: if lower than this add a little warm water to that in the pail. Some varieties apparently prefer warmer water—Horace Vernet, for instance—whereas, on the other hand, the effect of the warmer water on others will cause them to develop too quickly. On account, therefore, of the influence which water bears on the roses, it is unadvisable to replenish the tubes on reaching the show, but if it must be done, then have regard to its temperature and quality. To refill the tubes with hard chalky water, cold, direct from the main, or soft warm water found possibly in a greenhouse is a risky thing to do, and not seldom the cause of roses failing to stand.

Staging.—The staging-shed, the place where we set up the cut blooms in their respective tubes, should be cool, free from stuffiness, but at the same time free from draughts, for roses dislike a draught quite as much as

they do foul air: a loose box facing north makes a good staging-shed. We will now suppose that the exhibition boxes are all mossed and ready on the stage, the tubes watered up and wire supports conveniently placed: the roses now have to be set-up. A good deal depends on the arrangement of a stand: all other things being equal the judges are directed to give a point for "general evenness, variety, arrangement, &c." How are we to set about it? In the first place, the largest roses should go in the back row, and the smallest in the front, and light and dark blooms should be placed alternately; if in the back row we commence with a dark, the second row should begin with a light. But understand that the middle row is always regarded as the most favourable position, since flowers so situated have a better back and foreground. Therefore in the second row should be staged the most highly finished flowers. And here also we put such Teas as White Maman Cochet, Comtesse de Nadaillac, and, if large enough, Madame Hoste and Souvenir de Pierre Notting or indeed any rose of a yellow tint, provided it is of fair size. Yellow brings out the colour of a stand. Yellow roses of good size are at present not plentiful; we must make the most of those we have, and put them in the middle row, where, right and left, back and front of them, are staged the richest reds—Horace Vernet, Charles Lefébvre, Baron Gonella, Hugh Dickson, &c.—their colour being emphasised by contrast. For this reason it is generally judicious to introduce a yellow, even if not a very good one, one which will barely score a point; it will enhance the value of the dark reds near it, and render the stand as a whole more attractive.

The back row flowers should stand about 6 inches above the moss; high staging detracts from the size of the blooms, and roses last longer on short stems than long ones. Evaporation and absorption being carried on through the leaves of a plant, roses staged with abundant foliage are more sensitive to the heat of the van and show tent than those with less. It is therefore recommended that all foliage, except perhaps one leaf, should be removed either at the time of cutting or staging.

When the staging is finished, the tubes firmly fixed and roses labelled, the petals should be tied to prevent fluttering on the journey. Some varieties will, however, not require a tie.

Arrival at the Show.—Whether we have a long or short distance to go, it is best to reach the place of exhibition by seven o'clock in the morning, before the growing period commences. Of course there will be occasions when, by reason of train service, we shall be hindered from arriving so early, but our personal convenience—a night or early morning journey—ought not to be studied: the roses must receive the first consideration, everything else being subordinated to their welfare. On the journey look after the rose-boxes, do not trust them solely to a porter; see them yourself in and out of the railway van; speak to the guard about them. Sometimes the atmosphere of the van is hot and stuffy; by reaching the station, if a terminus, in good time you may be able to select a good place where the roses can obtain air, and also see that the boxes are packed together securely, so as not to rock about on the journey.

On reaching the place of exhibition keep the

boxes out of the sun raise the lid just to see whether the tubes or flowers have been displaced on the journey, and then close them until the time comes for the final staging. First prizes are sometimes lost by over eagerness to begin staging; you want to get at it to see how they look. Time after time one has seen exhibitors begin staging the very moment they reach the show; boxes are opened, blooms are changed, ties removed, flowers dressed, ties again put on, and the poor roses are worried to death long before the hour for judging, and then when the critical moment arrives the roses are past their best and some one else wins in a canter. Be patient. If you have time to spare, go and take forty winks; both you and your roses will be all the better for it.

A few hints as to position. Light plays an important part in aiding or detracting from the colour of the blooms; this the exhibitor will soon discover. A mellow subdued light is the best, and the clear daylight the worst for roses. If the exhibition is held under canvas avoid the entrance to the tent the light there is generally harsh. And the strips of the canvas sometimes vary in tone; old canvas is dark and grey, new canvas buff—the buff giving a mellow light is better for the roses. Get your box under this if you can. Note the spot where the sun will be shining on the tent about judging time, and if possible avoid it. See to the ventilation of the tent near your boxes, but bear in mind that although heat is injurious draught is more so; if the petals flutter in the wind mischief is being worked. For this reason it is unwise to stage roses outside the tent or under a tree unless there is a still atmosphere.

Dressing the Blooms.—Dressing a rose is an art difficult to describe, but soon acquired by intelligent observation. The object of dressing is to assist nature; to arrange the petals after removing the tie in order that the flower may appear as natural as possible, and at a particular time. Before we can excel in dressing we must be able to appreciate a good rose when we see it. The definition of a good rose, as laid down by the National Rose Society, runs thus:—"*A Good Rose.*—The highest type of bloom is one which has form, size, brightness, substance, and good foliage, and which is, at the time of judging, in the most perfect phase of its possible beauty." Notice the words "its possible beauty"; that is the possible beauty of a particular variety. On the other hand, the National Rose Society has a caution upon the subject of dressing: "A bloom dressed so as to alter its character shall count as a bad bloom." Compare these statements. The former points out the ideal rose, the latter the method of dressing to avoid; "dressed so as to alter its character." Therefore in dressing a rose the distinctive character of the variety under treatment must be kept in mind. It is easy enough to force out, to turn back the petals like a water-lily or gardenia, as the flower girls at the Royal Exchange or Piccadilly Circus do to red roses; and a stand of roses with the petals forced back unnaturally may momentarily attract attention, but judges look at each flower individually, and will not be led astray by its apparent size. As an illustration, Victor Hugo and Madame Victor Verdier, both pointed flowers, will be dressed out of character if their petals are spread out like Charles Lefébvre or Alfred K. Williams; or we

can extend the petals of Ulrich Brunner or Mildred Grant, making the blooms cover a considerable space, but their distinctive character will be destroyed by the process. All roses, with very few exceptions, must be dressed more or less, but in the doing of it see that you preserve their natural beauty.

III. Decorative Roses

Thus far we have had under consideration the cutting and setting up of specimen blooms—"exhibition" roses, each flower staged in a separate tube. We have now to deal with decorative or "garden" roses.

Decorative roses are usually exhibited in bunches made up at home. Varieties comprised in this section are principally the small and more or less single Teas, Hybrid Teas, and Chinas, together with those single kinds of summer flowering, such as the species and their hybrids.

The chief beauty of a single rose lies in the freshness of the stamens, which in most cases are of a golden yellow, adding brilliancy to the colour of the petals. Single roses expand quickly and are more fleeting than double. It is true that some flowers will remain wide open for two or possibly three days, but there is only one day, and in certain instances only a few hours, during which the stamens retain their freshness and not turn black; and because it is essential that a single rose should be "at the time of judging in the most perfect phase of its possible beauty," the question naturally arises at what stage of development should those roses be cut whose beauty depends to a very great

extent on the freshness of their stamens? Here is a problem that can be solved only by close observation and practical experience, but when solved will be of the greatest assistance in staging single roses successfully.

Cutting.—As a considerable amount of time will be involved in putting the roses into bunches, cutting cannot well be deferred until the afternoon or evening before the show; and because we cannot cut them in the heat of the day, there is nothing for it but to gather them in the early morning of the day previous to the exhibition. In other words, decorative roses exhibited in bunches will have to be gathered some twenty-eight to thirty hours before they are judged; therefore we must look ahead and cut the blooms of to-morrow, not those of to-day. In some cases, the briers and Multifloras for instance, blooms of which last only one day, the blossoms must be cut when the petals show colour but still remain closed; tight little petals just pushing out of the sepals. Other sorts, like Macrantha at a later stage, petals just parted, flowers cup-shaped. If cut thus they will open out early the next morning and be in perfection by judging time.

In selecting decorative roses, cut the sprays with long stalks, avoiding if possible shorter sprays on account of the difficulty attached to effective bunching of short-stalked roses. On no account cut old last year's wood to form a stem; the spray will probably wither if you do. Cut also a few sprays of foliage where needed for working into the bunch. Flat baskets or trays in which to lay the sprays will be found suitable receptacles. Convey the sprays to the staging-shed with as little delay as possible; cut the stems and put them at once in the jars of water awaiting

them, and there they can remain until all the required varieties are gathered.

Bunching.—And now comes a matter calling forth much patience: before putting up the sprays into bunches they must be trimmed. With the Multifloras—the Garland or Simplex, for instance—it is like thinning grapes; every flower of yesterday and to-day will have to be removed, leaving only the little white balls, the unexpanded flowers; for the yellow stamens of to-day's flowers will be black to-morrow. Or take another example, Lady Curzon, a single Damask: here we may have a stem on which there are, say, three flowers, two fully out with glorious yellow stamens and one still pointed but showing colour. The latter is the one to keep. Remove the others for they will be past their best by this time to-morrow; the petals will have lost their fresh pink shade and the stamens their gold. Of course there are exceptions dependent on the speed of development, and the type of weather, cool or forcing, a contingency not to be lost sight of. One has cut young flowers in anticipation of a hot day on the morrow, and then the temperature falls, the morning of the exhibition is cold, the flowers remain unexpanded, and one regrets that those open blooms were removed and left behind.

After trimming, the sprays have to be wired. Use black wire, as used by florists, of sufficient strength to support the blooms, and very fine wire for binding round the stem. Do not resort to wire if you can possibly do without it. There are, however, some decorative roses with pendent flowers: Gruss an Teplitz being a case in point, where nearly every stem carrying a flower will

have to be wired. When all the sprays are ready the bunch is then made up. Do not crowd the bunch; let each bloom stand clear of the other; insert foliage at the back or wherever needful to impart elegance. Bunching requires taste and skill, the main point being to preserve the type set by nature. On no account make the bunch stiff and symmetrical like exhibition bunches of narcissus, dahlias or pansies, for the charm of a nosegay of roses lies to a great extent in its natural gracefulness.

Packing.—It is quite unnecessary to carry the bunches to the exhibition in water, provided they have had time to absorb a copious supply beforehand. To allow for this it is advisable to complete the bunching by the middle of the day, and place each bunch in a large glass jar or anything containing plenty of pure water. If the bunches have had a good drink they will travel quite fresh laid flat in shallow boxes. Before putting them in the boxes pack some wet moss around the base of the stems, and by wrapping it up in butter paper the moss will keep damp. when thus packed the bunches will preserve their freshness, and arrive at the show in good condition.

Staging.—If we are exhibiting both exhibition and decorative roses, the first to demand attention on reaching our destination will obviously be those which are not in water. Get your vases filled with water, unpack the bunches and cut the stems. Cutting the stems before putting the bunches in the exhibition vases certainly takes time, but it is very essential and ought not to be neglected.

Nothing has been said about the kinds of stands and vases to use; it is a matter of opinion, there is no regulation type. But although tin vases, even when painted green, are not so artistic as earthenware or glass, nevertheless they are much lighter in weight, a consideration when travelling by rail.

If, after the bunches are set up, it should be found that the flowers appear crowded, which frequently happens, especially in the case of singles, by the expansion of the blooms on the journey, some should be removed by the scissors. A bunch where the blooms crush one another is an inferior bunch and will so be regarded by expert judges. There is generally some thinning required at the last moment if we have regard to natural beauty.

CHAPTER XVI

JUDGING

The success of a society holding an annual exhibition of roses is materially affected by the judging. Notwithstanding an attractive schedule, good prizes, and good management, if from any cause the awards of the judges are unsatisfactory there will certainly be a falling-off of exhibitors at the Society's future shows sooner or later. An exhibitor does not so much mind losing the position he thought he was entitled to, if he knows that the judges are experts and have taken pains; but what he does object to is, that those appointed to judge—good horticulturists though they may be in other respects—possess, as evidenced by their awards, little knowledge of what the rose world considers a good stand of roses. The exhibitor wants to be assured that the best roses will win, he dislikes leaving it to chance, and so he stops away the next year. Bad judging gives the show a bad name.

A judge should know a good rose when he sees it. He should be acquainted more or less with all the varieties that come under his inspection; should know which is an easy, and which is a difficult rose to grow to perfection, and whether a particular bloom is true to type in form, size, and colour; in fact, he should be an exhibitor or a rose specialist. And possessing these qualifications, he should be impartial as to types; not

allowing himself to favour particular varieties, to prefer one shape to another, to be attracted to Teas because they are Teas, but simply to put this question to himself: Is this rose that I am now judging a good specimen of the variety? and then act accordingly. And, further, a judge should be quick to notice circumstances or little details which may militate for or against a particular exhibit. For instance, to observe its position, whether it stands in a better or inferior light than others in the same class—a lid is sometimes set on its side behind the box in order to throw up the colour of the roses—to observe the manner in which the flowers are staged, for blooms staged close together appear larger than those set wider apart, although the size of the rival boxes may all be the same. These and other like circumstances should not escape his notice.

But what constitutes a good rose, and what a bad one? The following definitions, as set forth by the National Rose Society in the "Rules for Judging at Rose Shows," supply the answer:—

"*A Good Rose.*—The highest type of bloom is one which has form, size, brightness, substance, and good foliage, and which is, at the time of judging, in the most perfect phase of its possible beauty.

"*A Bad Rose.*—The following are serious defects in a rose-bloom: faulty shape, confused or split centre, and faded colour; also being undersized, or oversized to the extent of coarseness or over-blooming.

"*Form* shall imply: petals abundant and of good substance, regularly and gracefully arranged within a circular outline, and having a well-formed centre.

"*Size* shall imply that the bloom is a full-size representative specimen of the variety.

"*Brightness* shall include: freshness, brilliancy, and purity of colour."

Now, there are two points in this definition to which special attention should be given; points which appear to be overlooked occasionally by those deputed to judge roses, namely, the definition of "form" and "size." Form comes first, even before size and brightness; a large bright rose, it may be as large as a peony, if it lacks form is a bad rose. And notice the primary qualification of form: "petals abundant and of good substance." Do not be led away by a merely pretty rose; it may be bright and perfect in outline, but if its petals are thin and papery, it is lacking in form. And the same with size. Size is a relative term — relative to type; a flower to possess size must be "a full-size representative specimen of the variety." So that a stand with small flowers, if they are representatives of the varieties, may be a better stand than another which has certainly larger but relatively undersized roses. It is advisable to emphasise this, because mere size is so attractive to the inexperienced judge, and to many of the public as well, who infinitely prefer large, coarse specimens to the more highly finished but smaller ones.

The next thing is, how does the judge set about his work, and on what does he base his decision? It is not the stand as a whole, but the individual blooms that determine the issue. It is well for the exhibitor to understand this, so that when staging he will see that only those roses find admittance to his box that will

score at least one point; remembering that, notwithstanding the one or two excellent flowers he may have, flowers far superior to any in the exhibit of his rival, yet if the rest are weak ones, the excellence of the others is heavily discounted. For example, in a stand of twelve blooms, it is better to have twelve medium-sized flowers, all scoring something, than two blooms good and the remainder poor. Indeed a very bad bloom is not merely passed over, but a point is taken off, as we shall see directly.

The number of judges appointed is usually three, so that when points of difference arise the decision of the majority shall prevail. In judging roses, the best results are obtained—provided all three are experts—where at the commencement of judging a class, each judge acts on his own responsibility: each goes his own way to work, draws his own conclusions, and when they have severally finished, compare notes. By this method it is frequently found that the judges are either unanimous, or at least the question is reduced to three or possibly four exhibits; and it has this further advantage, each judge exercises his own judgment, it is not left to one man with the other two acting merely as assessors. Judging demands concentration: the judge should give his whole mind to it, and should not be interrupted or hindered by visitors. Provided with a card or notebook he first of all passes along the row of exhibits in the class to be judged, and takes down in the order in which they stand the several exhibitors' numbers given on the backs of the exhibitors' cards. Having done so he then counts the blooms in each stand that will score a point, records the number

on his card against the exhibitor's number, and makes a note or two, his first impressions of the exhibit, as to form, size, colour, &c. Probably he will now be in a position to strike out those exhibits which he considers have no chance of winning. If the figures indicate close competition he will make a further inspection with a view of ascertaining how many three or four point flowers there are in each stand, and how many rough and bad blooms. By this time his companions will have concluded their inspection also, and the three will compare notes. If each one has come to the same conclusion, the probability is that this is a correct decision, and nothing remains but to make the award; if there is only a slight variation the judges will conjointly inspect the stands, and confer, and doubtless arrive at a decision.

If, however, by this plan no agreement can be reached, it will be necessary to point the blooms. On this process the National Rose Society has issued the following directions:—

"The following, *whenever necessary*, shall be the method of comparison:—

"One of the judges shall name a number of *points* for each bloom.

"The other two shall stand by and *stop* him when they do not agree, one putting down on paper the number of points allotted to each bloom as they are decided upon, and adding up the total number of points given to each stand or exhibit.

"*Three* points should be given for high-class blooms; *two* for medium; *one* for those not so good, but not

bad enough to cut out; and one or even two *extra* points for a very superior bloom. One point should be taken off for every bloom decidedly bad. No point should be allowed for a bloom left tied by an exhibitor. A typical bloom of a *three-point rose* (which may be carried by one of the judges) should be selected and referred to as necessary in order to keep up a uniform standard throughout the exhibits."

But observe, pointing the blooms should be the exception, not the rule; it is to be resorted to not invariably, but "whenever necessary." Pointing is at all times very deceptive, the total score is not always to be relied upon, because it is exceedingly difficult "to keep up a uniform standard throughout the exhibits"; there is a natural tendency to raise or lower the standard relatively to the general quality of the roses in each stand.

And now a remark or two on disqualification. Do not disqualify if you can otherwise avoid it. Eagerness to disqualify reveals the novice. Remember, the incorrect naming of a rose is not necessarily a case for disqualification: a Maman Cochet may be labelled Alfred K. Williams, but unless there is another Maman Cochet in the stand the exhibitor incurs no penalty. As to duplicates in a stand: it is a difficult question to decide, but before enforcing the penalty all the circumstances should be considered: where two blooms, each correctly named, are discovered, it is evidently an oversight, occasioned doubtless by the hurried substitution of a rose at the last moment. To send for the exhibitor, and permit him to rectify the error is far

more satisfactory than a rigid adherence to the letter of the law. It is a different thing altogether when, in the opinion of the judges, duplicates are introduced apparently with intent.

A word in conclusion to the secretary of the rose show. It materially assists the judges if exhibitors' cards are issued to be placed face downwards in front of the stands. Numbers placed on the stands are all very well perhaps in local competitions, but in ordinary rose shows the judges want a card which bears on the back both the number of the class and the number of the exhibitor. The mere withholding the name of the exhibitors until after the awards have been made will not prevent a practised hand from knowing whose stand in the trade classes he is judging if he wants to; the varieties staged, the character of the flowers, together with other peculiarities, will enable him to recognise a particular seventy-two or forty-eight, cards or no cards. But he does not trouble himself in the least about it; his personal credit as a judge is more valuable to him than a momentary favouritism. He does, however, need a card that will indicate the class he is judging, and on the back of which he can mark the award.

CHAPTER XVII

GROWING ROSES UNDER GLASS

Roses are cultivated under glass with a twofold object: (1) to have them early, and (2) to bring some varieties to a higher state of perfection than is possible when grown in the open.

The Hybrid Perpetual and most of the Hybrid Teas by reason of the strain of *R. damascena* and *R. gallica* which they possess are better suited for outdoor than indoor cultivation, and they are grown under glass chiefly to get them early. We know how trying to them is a hot sun in the latter part of July or the beginning of August how the flowers are rushed out and petals scorched, and that they cannot stand extreme heat, and are never better than in a comparatively cool atmosphere, when they can develop the blooms gradually. Observe what marked effect the climate of certain localities of Scotland has upon such varieties as Mrs. W. J. Grant and Captain Hayward; grand blooms that are hardly ever seen in England. It is true the blooming season is late, but when the flowers come to perfection, a Hybrid Perpetual grown in Scotland is hard to equal. So that, if any one expects to get finer Hybrid Perpetuals under glass than in the open, he will be disappointed.

But with Tea-scented varieties the case is different. The original parents of the Tea *R. indica odorata*, as we

have seen in Chapter VI., are both natives of a warmer climate than ours, and because of their tenderness they were cultivated under glass, and their progeny more or less inherit their constitution. Not that the Tea dislikes the heat of summer—it revels in it; but it is very susceptible to frost and frequently succumbs after a severe winter. We know that there are roses classed as Teas, such as Maman Cochet, for example, which are apparently as hardy as the Hybrid Perpetual; but in them, as a rule, the delicious Tea perfume is generally found lacking, which seems to indicate that they are considerably removed from the real Tea-scented parent, whatever other strain they may possess. A good bred Tea must be grown under glass if it is to be brought to its highest state of perfection. For example, a Catherine Mermet, grown under glass, is a different rose altogether from one cultivated in the open, and Madame de Watteville is another; in the garden the latter has almost completely dropped out of cultivation.

Now, there are two methods of growing roses under glass; we can have them in pots, or they may be planted in beds. The former is the best for the Hybrid Perpetual and Hybrid Tea; the latter for the Tea-scented. By growing them in pots, we insure a succession of blooms. Starting in November, the pot roses are brought on in relays, in frames, and taken into the house in batches for flowering, are removed when the first crop is over to make room for others, and so on from, say, February to May or even June. This refers principally to Hybrid Perpetuals. With Teas it is different. Their growth being more active and the second crop of flowers frequently

better than the first, there is no reason why they should go out after the first flowering is done; and so it is better to plant them in beds under glass, to remain permanently.

In selecting a suitable house in which to grow roses, it should be borne in mind that the plants require as much sunlight as possible, and also that the ventilation of the house should be so arranged that whilst air is admitted no draught is created. As to the kind of house, the choice is wide and opinions differ; but there are those who use a span-roof house, with eaves only a foot or two off the ground, having a sunk passage running the length of the house right and left of the door, thus dividing the ground space into three sections. On the side-borders the pot-plants are staged, and the central bed contains the roses planted out. A span-roof admits more light to all parts than a lean-to: the roses are brought nearer to the glass, and by having a sunk passage, no wooden staging is necessary, and very little outside brickwork.

Potting.—It does not follow that because we grow roses in pots that they should therefore be forced: they will be quite as good, if not better, although not so early, if cultivated in a moderate temperature varying between 50 and 60 degrees, or even just sufficient to keep out the frost. Before a pot rose can be forced it must be thoroughly established. This will not be the case the first season after potting, but roses potted in the autumn may, in a cool house be brought on and flower under glass the following spring.

The compost for potting should be of the following

proportion: two parts of fibrous loam—the top spit of a meadow that has been clamped for a year or two and so become friable is best; one part of well-rotted cow dung, and one part of a mixture of silver sand, wood ash, and leaf-mould, the quantity of sand depending upon the nature of the loam. Add a little phosphate in the form of basic slag, or give bone-meal, the whole being well mixed together. The pots, 8-inch ones, should be clean; place at the bottom a sufficient amount of crocks to insure good drainage.

In the autumn select healthy maiden plants that have been budded low down close to the roots. Insert the plant in the pot so that the union of bud with stock will come just below the surface of the soil, and after spreading out the roots well ram in the compost, since the firmer the soil the quicker will be the root action. When the potting is finished give the plants a good soaking with water to further consolidate the soil, and place them for the time in a cool frame or any sheltered spot sufficient to protect them from frost; see that the plants do not suffer from lack of moisture. Established plants can be taken into the house in November and December, for flowering in February and March, but with those recently potted it will be quite soon enough if they are taken in by the end of January or beginning of February.

When the time has arrived for the pots to be brought in, first of all see that the drainage is right and the soil free from worms; this is done by tapping the plant out of the pot. During the period in which the pots have been in the cool frame or shelter the surface soil has

probably become caked; remove some of it, and replace with a layer of compost, for by having a loose top layer evaporation is checked.

Pruning depends on the variety. As a rule, all kinds grown in pots should be pruned harder than would be the case if grown in the open; Hybrid Perpetuals should be pruned hard if good specimen blooms are required.

After pruning, a little syringing from time to time will assist the plants to break. As soon as the buds are formed apply very weak liquid manure, and it is better to give it weak and often rather than strong doses. The general cultivation will be regulated by the variety under consideration, and if quality rather than quantity is desired, thinning and disbudding should be carried out as already described for plants in the open.

Beware of two things, stuffiness and draught; the rose needs pure air and good ventilation, but they must be given in such a manner so as not to cause a check, or the result will be an attack of aphis and mildew. With reference to mildew: since it is not advisable to syringe the plants after the foliage is formed, we cannot spray against it as we should do in the open. Pasting a little sulphur on the hot water pipes and keeping the house closed for a while will generally be sufficient, but should the mildew be persistent dust a little sulphur on the foliage and parts attacked. To destroy aphis, set to work with finger and thumb, or brush the shoots with a bunch of feathers or sponge them with pure water.

The care of the pot-plants after flowering is very important; do not neglect them. We know the plants in the open ground send up strong shoots as soon as

the first crop of flowers is over, and that it is from this growth that good roses will come next year. So should it be with pot-plants under glass, and we must do what we can to encourage this growth by keeping the plants in activity. Remove the pots to another house if there be one, and when this second growth has been made put them in some sheltered position in the open to harden and ripen, placing them on a layer of cinder ash or plank to prevent worms from getting into the pots.

Planting out in Beds under Glass.—For this purpose select such Teas and Hybrid Teas as give a succession of flowers. Prepare the bed carefully, set the plants about 18 inches apart, and cultivate the same as for those in pots. By the end of June the plants should be ripened off, and because they cannot for this purpose be removed out of doors, they must be rested where they are. This is done by giving the house the utmost possible ventilation, and withholding water from the plants. Some growers allow them to flower again in the autumn, but the plants will be in better condition for next year's flowering if they are kept at rest during the summer and autumn.

CHAPTER XVIII

PESTS

Caterpillars — Aphides — Frog-hoppers — Earwigs — Saw flies — Rose Weevils — Mildew — Leaf-spot — Black Blotch — Red Rust — Brand — Tumour.

"He who grows roses gives hostages to fortune," was a proverb of the late Dean Hole, and alas! cultivators are only too conscious of its truth, for when all has been done that cultural skill can do, the roses are still at the mercy of climatic conditions. But if we cannot regulate the weather, if late spring frosts and summer hail must be endured, we can in no small degree combat the numerous pests that assail the rose, whether insect or fungoid. But before dealing with the pests themselves, it will be well to consider a certain contributory condition, a condition summed up in one word, namely, susceptibility.

Susceptibility depends (1) on the natural or inherited constitution of the plant; and (2) on its state of health when disease is prevalent. First, then, as to natural constitution. Who has not observed how the wild roses, *canina* and *arvensis*, although not entirely immune, are nevertheless more proof against pests than the cultivated rose; that whilst the roses of the garden may be covered with mildew and green-fly, the roses of the hedgerows are comparatively free? Why is this? Surely, the reason

of this is not very far to seek: it is matter almost entirely of constitution. These wild roses are hardy natives of Great Britain, and consequently less susceptible to sudden changes of temperature; whereas the roses of the garden, the offspring for the most part of *indica*, *damascena*, and *provence*, roses of warmer countries, are more susceptible. And the same holds good as between varieties under cultivation, varieties of the class; one, for instance, never has the mildew, another has it at once.

And with reference to the second cause of susceptibility, the state of health when disease is rife, we see how it affects ourselves. Contagion and infection are, for all practical purposes, relative terms, relative to predisposition. For instance, scarlet fever may assume a most virulent form in one person, and to another although living in the same house, sleeping in the same room, it may be innocuous. So it is with roses; if the plants are in good health, there will be little or no disease; but, on the other hand, and from whatever cause, from cold and wet, heat and drought, where there is defective root action resulting in a lowering of the constitution and a retardation of growth and development, there the disease seizes its prey. And, therefore, although it is necessary to combat disease whenever it appears, we should do all we can to maintain the plant in a healthy condition. "Prevention is better than cure"; vigorous root action will ward off many foes.

I. INSECT PESTS

Caterpillars

Caterpillars of all sorts and sizes: leaf rollers, leaf-eaters, bud-nibblers, shoot-borers, black, brown, green wrigglers, stringers, curlers, loopers, web-spinners, and webbless; some bred in the bud, others dropped from adjacent trees and feeling altogether strange to the situation into which misfortune has cast them—we class them altogether. We do not much care whether they are lepidoptera or hymenoptera, moths, butterflies, or flies, they are eating our roses and must be removed. Hand-picking is the only satisfactory remedy. Search for them in the early stages when just hatched out—little black specks on the rosy shoot bursting from the stem; search for them in the foliage, search for them in the bud.

But do it methodically: do not stop to unroll the leaf, but pinch off every damaged leaf and squeeze it; the caterpillar may or may not be there, but you will not have to examine that leaf a second time. Of necessity hand-picking stains the fingers and the soft bursting sensation caused by the crushing of a fat caterpillar between finger and thumb may not be pleasant; but harden your heart and realise you are fighting a foe that is attacking your defenceless pets. In some cases the enemy is wily: he just strings down or falls off and lies curled up, death-like, in the interstices of the soil, hoping to elude you by instant flight; cast your eyes on the ground as he falls and settle him, or he will be up again as soon as your back is turned. Remember the

caterpillar is very different from the aphis; he is simply passing through a stage of existence, the second one of four, he does not himself multiply progeny, and the few caterpillars that are found on a second or third inspection, are either those you have missed in your first search, or have hatched recently. Not so with the aphis, which let us now consider.

The Rose Aphis (*Siphonophora rosæ*)

This insect, belonging to the order of hemiptera, is commonly known as "green-fly." It feeds exclusively

Fig. 30.—The Rose Aphis (magnified).

on the rose. Furnished with a long hollow trunk bearing at the extremity a set of three needle-shaped pinchers, it pierces the soft parts of the young growth —the tips for preference—and sucks up the sap. Appropriately is it called a Siphonophora, for, like a siphon, it draws the life juices from the young growth.

You will the better realise the process if you pronounce the word "siphonophora" by inspiratory action of the lungs. Next to mildew, these horrible sap-suckers are the deadliest enemies of the rose; for from a single fly an army corps of suckers is speedily begotten, and unless removed at once, both shoot and foliage are soon exhausted of their life-blood.

To appreciate the extraordinary fertility of this insect we must understand something of its life. Aphides are both winged and wingless; the male always has wings, the female when it thinks it will. Commencing in autumn, the male and female both bear wings, and eggs are laid and hidden away in the rose-stems, leaf-stalks, or anywhere else that provides suitable winter quarters. They are called eggs, but since they are as large as the insect itself, they may possibly be a sort of chrysalis. In the spring the eggs hatch, and the adult female from the egg—a wingless queen-mother—selects for herself a suitable position on the young wood or foliage of the rose; just one small insignificant little green-fly all by herself. Here is our opportunity if only it be seized; destroy that one aphis as soon as discovered, for if allowed to remain the queen-mother will produce young herself without the agency of the male. In a very short time each one of her progeny becomes the parent of others and this viviparous reproduction, so uncommon in insect life, and where only females are present, will go on generation after generation. Millions and millions are brought forth. Crowding every available space on the juicy shoot, these Siphonophoræ suck and suck and suck.

And now another extraordinary thing happens, if possible still more remarkable. The first settlement is full; the stem can hold no more; food perhaps is scarce, and so another shoot must be colonised. The first lot are all wingless, but now winged females are born, which, flying away from the common crowd, alight on an adjacent stem and proceed to raise another army corps, to deposit young after the manner of the first queen-mother.

Aphides are sensitive to cold and wet; they have to keep their feet dry and wear mackintoshes. And therefore each one is provided with a pair of tubes called cornicles, situated near the extremity of the body, one on each side, and through these cornicles is emitted a gummy solution known as honey-dew, with which the leaves and stems on which they stand are covered. And more than this, passing outward through the glands of the back cuticle is a waxy substance which serves to keep them dry. Towards the end of their summer campaign, when food becomes scarce, males as well as females are produced, fertilisation ensues, eggs are once more laid, and the yearly metamorphic cycle is completed.

Now is not all this very wonderful? and does it not show us the importance of exterminating the advanced guard of single mothers before the invading myriads arrive?

Aphides rejoice in hot, dry weather, and it is just this kind of weather which checks the growth of the rose and renders it susceptible. Roses, we are told, are gross feeders, and manure is given without stint; but the

excessive manuring of the plant, especially if the food is nitrogenous, a wood and leaf stimulant, predisposes the rose to aphis attack. The damage caused by aphides is twofold: (1) by suction the plant is deprived of its vitality; and (2) the deposit of honey-dew chokes the breathing spores.

Remedies.

(1) Crush the aphides by drawing the thumb and finger up the stem; squeeze the foliage. Afterwards cleanse the shoots with soft water. This is the best remedy.

(2) Go round with a bowl of plain water, or soft soap and water, and a piece of sponge. Bend the shoots into the water and sponge both shoots and leaves.

(3) Dust off the aphides with a bunch of feathers.

(4) For a spray the following has been recommended: 1 quart of soft soap boiled in 2 quarts of soft water. Before cooling add 1 pint of paraffin. Dilute the mixture with soft water ten times its bulk. The paraffin acts as an astringent, which, together with the soft soap, cleanses the plant of honey-dew and renders it less attractive to aphides.

Natural Checks.—Every insect has its natural foe, and the aphis is no exception to the rule. Insects that prey upon aphides are chiefly the *coccinellidæ*, ladybirds and their caterpillars; *syrphidæ*, the caterpillar of the hover-fly; and hymenopterious parasites, which lay their eggs in the bodies of the aphides; but inasmuch as their method of reproduction follows the usual four-stage course of insects, they cannot keep pace with the rate of

increase of aphides, and we must resort to other means of extermination.

The Frog-hopper (*Aphrophora spumaria*)

A small white or pale green beetle-like insect, the larva of a brown beetle which, from its activity in the imago state, is termed "frog-hopper." The larva is usually found in the fork of the leaf junction with the stem secreted in a frothy substance (*spumaria*) derived from the juice of the plant on which it feeds, and which is commonly known as "cuckoo spit." There is always one, sometimes two, in each deposit of spume. The insect is very elusive, hiding in the hollow of the leaf-stalk, where it will frequently be found after all the spume has been wiped off, so search for it very carefully, be quite sure you have it.

Remedy.—Remove by hand or point of a knife.

The Earwig (*Forficula auricularia*)

The earwig is too well known to need description. It is an eater of vegetable matter, tucking itself in between the petals of the nearly full blown rose on which it feeds, forcing its way down to the very heart. Never tie up an earwig in a rose if you can help it, for in that condition it is especially destructive. It seems as if the tighter the flower is tied the greater the mischief caused by this insect.

The Saw-fly (*Hylotoma rosarum*)

There are several kinds of saw-fly, the larva of which feed on the foliage of the rose. The commonest is that

which, in the caterpillar stage, is flat, green, and tapering, about a quarter of an inch in length. It is found in groups on the under side of the rose leaf, scaling off the green, causing brown, bare, unsightly patches, but, happily, it does not attack the buds.

Remedy.—Pinch off and destroy all infected leaves.

Rose Weevils

These are small beetles that attack the succulent wood of rose plants, young maiden growth and the foot-stalks of the bud in its earliest stage being generally selected; innumerable holes, pin-pricks, are made round the stem, which cause the shoot and bud to wither.

Actual Size.

Fig. 31.—Rose Weevil (magnified).

There are several kinds of these destructive insects, but of those most commonly met there are two: the one of a beautiful bronze green about two-eighths of an inch long, the other jet black about the size of a flea. Both are agile and drop off at the least disturbance but the black one is the most alert, even the vibration of the ground as one approaches the plant is enough to cause it to loosen its hold, gather itself within its hard shell, and fall off the plant. It is most difficult to capture, and even when seized between the finger and thumb, something more than a hard squeeze is required to kill it; the best way to capture it when discovered is to place one hand, palm uppermost, below the leaf or stem on which it is seen, and, with the other, shake the stem, when it will fall into the hand ready to receive it. In

cases where the injury but not the foe is detected spread a white pocket handkerchief on the ground under the plant, and shake the plant. These weevils, as a rule, are night feeders and descend to the earth for the day; and some growers, where the pest is very prevalent, spread white cloths under the plants overnight, and in the morning find the weevils on the cloth. They are thought to be more numerous in the vicinity of rhododendrons. Next to aphides and mildew and caterpillars, they are the most harmful to rose-buds of all pests.

II. FUNGOID PESTS

Parasitic fungi are of two classes, *epiphytal* and *endophytal*, and, as the names indicate, the former grows upon the surface of plants, thereby causing both exhaustion and suffocation, and which can be reached by external remedies, such as spraying; the latter originates within and affects the tissues, and only show themselves when the injury is done. In all fungi there is an entire absence of chlorophyll, and therefore to sustain life they absorb the carboniferous substance assimilated by plants. This abstraction of carbon, if persistent, deprives the plant of life.

Rose Mildew (*Sphærotheca pannosa*)

This is an epiphytal parasite, positively the most virulent of all diseases to which the rose is exposed. If permitted to remain it will not only destroy all prospects of good flowers in the summer, but also there will be no second or autumnal crop, and, more serious still, it will

so severely weaken the constitution of the plant that it recovers with difficulty, if at all. So aware are rose-growers of the disastrous consequences resulting from this scourge that it is needless to dwell upon it.

There are three stages in mildew growth: the *mycelium* or primary stage, the *conidia* or reproductive stage, and

FIG. 32.—Rose Mildew (*Sphærotheca pannosa*).

the *spherical* capsule or resting stage the latter continuing from autumn to spring.

In the primary stage patches of greyish-white mould appear on the upper and under surface of the foliage causing the leaf to curl or shrivel (Fig. 32 [1]). This mould, termed *mycelium*, is a thin creeping layer of delicate interwoven threads from which arise the chains of *conidia*, elliptical in form one on the top of the other, end on end (Fig. 32 [2]). The upper cell being the first to mature is then detached, then the next one follows, and so on forming a successive

crop ranging over several weeks. The separated conidia are wafted to other leaves and stems and there germinate, spreading infection far and wide (Fig. 32 [3]). This is the second stage. On the approach of autumn the mildew enters upon a third stage; it loses its whiteness, turning an ochrey-brown, the mycelium no longer sends up chains of conidia, the parasite is now forming little brown spherical capsules, the winter quarters of the mildew germs. Thus the mildew obtains its scientific name: *sphærotheca*, the spherical capsule, and *pannosa*, the wrinkled shrivelled leaves.

Each capsule, no larger than the point of a needle, is composed of minute sections welded together like tortoise-shell, hard, water-tight, and able to resist both drought and frost. To make it air-tight the capsule is lined with a fine membrane, within which are enclosed eight living, resting spores, hundreds of these brown capsules being carried on a single rose leaf. The falling leaves convey these capsules to the ground; the leaves may decay but the capsules remain intact until the following spring, when, under the influence of the sun they burst, and the mildew resting-spores liberated to recommence their devastating work. This provision of nature for the preservation of life is very wonderful, is it not?

Contributory causes of infection are confined positions; the absence of free circulation of air; hot weather; a humid atmosphere; sunny days followed by heavy dews at night.

But how to stop the mildew is the question. In the first place, fight it in the resting stage by burning infected shoots removed at pruning-time, and as far as possible

the fallen rose foliage. Having regard to predisposition, keep the rose plants in good heart, for mildew seldom begins on plants in vigorous health or of sound constitution. Guard against defective root action wrought by checks in early spring and summer.

Remedies.—The following have been recommended :—

(1) Flowers of sulphur mixed with about one-third of its volume of slacked lime dusted on the foliage.

(2) 1 lb. flowers of sulphur;
1 lb. powdered quicklime;
Add sufficient water to form a paste;
Add 1 gallon of cold water;
Boil for 20 minutes, and when cool pour off the liquid, and spray at the rate of half-a-pint of the above mixture to 6 gallons of water.

(3) Half an ounce of sulphide of potassium dissolved in 1 gallon of water.

(4) 1½ lb. of Calvert's carbolic soft-soap melted in 7½ quarts of water; a pailful. Spray with one part of the mixture to three parts of soft water. This is the remedy we apply. It is efficacious, entails no danger from an overdose, and the foliage is cleansed and stimulated thereby.

(5) On the first appearance of mildew rub the infected leaf with finger and thumb to kill the mycelium.

For observations on the following fungoid pests and their remedies I am indebted to Dr. M. C. Cooke, M.A., LL.D., V.M.H., for kind permission to quote from his

valuable work, "Fungoid Pests of Cultivated Plants," and also to the Royal Horticultural Society, the publishers.

Rose Leaf-spot (*Septoria rosarum*)

On the upper surface of the leaf appear white rounded spots surrounded by a rather broad purple border. On these bleached spots black dots appear like pin points, which are the reproductive bodies, and contain the long thread-like conidia. Sometimes the bleached spots alone are produced, without proceeding to the formation of the reproductive bodies.

Remedy.—Pick off and burn spotted leaves.

Rose Black Spot (*Actinonema rosæ*)

This is one of the most serious diseases of the rose; perhaps the most deadly of all, and apparently on the increase. It usually appears on the foliage in large black spots like blots of ink, but sometimes in black specks or smears. The foliage turns yellow, withers, and falls off, and by the end of July the plant is denuded of leaves; the plant seems to have ripened prematurely. By this time all signs of black spot, except for the discoloration of the wood, may have disappeared and fresh green autumn shoots are coming; but the injury is more or less permanent, the old wood will die back, the plant is weakened and, if attacked the following year, will probably die. Unlike mildew, black spot cannot be washed off. The disease is in the tissues of which the black spot is merely the outward sign. Therefore to combat black spot spraying must be resorted to as a *preventive.*

Begin spraying as soon as the new spring growth

appears, and continue at fortnightly intervals until July. The germs of black spot are in the foliage. The disease is carried by the fallen leaves to the soil, where it lies dormant throughout autumn and winter, ready to attack the plants next spring. Therefore look well after the leaves; all infected foliage on the plant should at once be removed and burnt, together with all fallen leaves.

In addition to foliage, the wood should receive attention. Where a plant in the summer has shown signs of black spot, the wood, especially the young growth, should be drenched with sulphate of copper in the winter when the plant is completely at rest. The surface soil of a bed of roses infected with black spot should be skimmed off in the autumn to the depth of an inch or two. This done, give the bed a very slight dressing of sulphate of iron and then fill up with fresh soil.

Summer spray: half an ounce of sulphite of potassium to two gallons of water.

Winter spray: one ounce of sulphate of copper to two gallons of water.

Rose Rust (*Uredo rosæ*)

These uredines or rusts of different kinds are partial to the rose family. Rose rust occurs on the leaves, petioles, and stems of cultivated roses, bursting through the cuticle as a yellow powder. The under surface of the leaves is sprinkled with small pustules, either scattered or gathered together, which soon discharge the uredospores, which are rather variable in form, spherical, ovoid, or angular, with a minutely roughened surface.

It is recommended that plants which have been

attacked the previous season should be drenched with a solution of copper sulphate in water, in early spring before the buds expand. The soil around may also be saturated.

Rose Brand (*Phragmidium sub-corticium*)

This is the advanced stage of the rose rust, which it accompanies in the autumn, and forms little blackish tufts on the under surface of the leaves, in succession to the gradually disappearing uredo.

Spray with potassium sulphide and burn all fallen infected leaves.

Rose Tumour (*Botryosphæria diplodia*)

The living stems of roses are often disfigured by an occurrence of blackish elliptical swellings or cancerous-looking spots marked with darker concentric lines.

In this case the only efficient plan is to cut out the diseased stems, and burn them.

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APPENDIX

DESCRIPTIVE LIST OF SELECTED ROSES RECOMMENDED FOR CULTIVATION

This is not a catalogue. It should be regarded simply as a selection of roses, tested and known to be reliable. Few, if any, varieties of quite recent introduction are included, although many of them are very promising; but since they are as yet more or less on their trial, to include them might tend to weaken the selection. Growers who want more than are given here will consult the catalogues issued annually by the trade or that sent out by the National Rose Society. Probably the most complete list is that which gives the names and classification of the interesting collection of nearly 10,000 varieties cultivated by M. Gravereaux at L'Hay, Seine, and published by M. Pierre Cochet at the office of the *Journal des Roses*, Paris.

In the following list each rose is described under six heads: (1) the class to which it belongs; (2) the name of the raiser and date of introduction; (3) the colour of the flower; (4) the habit of variety; (5) the purpose for which it is suited; and (6) the way to prune it.

The Class to which the Rose belongs.

Abbreviations used:—B. = Bourbon; C. = China; H.C. = Hybrid China; D. = Damask; H.P. = Hybrid Perpetual; H.T. = Hybrid Tea; Mult. = Multiflora; N. = Noisette; H.N. = Hybrid Noisette; Poly. = Dwarf Polyantha or Pompon; Prov. = Provence; Rug. = Rugosa; T. = Tea-scented; Wich. = Wichuraiana.

The Habit of the Variety.

By this is meant the growth or constitution of the rose. The terms employed range upwards from *moderate*, *moderately*

vigorous, *vigorous* to *very vigorous*. Roses sometimes termed "climbing" and which make long growth are described as *pillar*, *vigorous pillar*, *very vigorous pillar*. A "*robust*" rose is one of good constitution, but makes short, sturdy upright growth.

The Purpose for which the Rose is suited.

Arch.—A pillar rose producing extra long shoots that can be trained over an arch.

Bedding.—Free flowering, short compact growth, suitable for planting close together to form masses of colour.

Bush.—A rose that will form a specimen bush when planted by itself and left more or less unpruned.

Creeping.—A rose that sends its shoots downwards if allowed to grow naturally, or will make a weeping standard.

Garden.—A free-flowering variety suitable for general garden cultivation in beds or borders.

Hedge.—A rose that makes a good hedge.

Maiden.—An exhibition variety which, although good as a maiden, is not so serviceable as a cut-back or pruned plant.

Pillar.—A rose which, by reason of its long growth and producing its flowers from the laterals, does not require pruning, the long shoots being secured, either upright or extended, to a stake or stakes to prevent them from whipping in the wind.

Pot.—Suitable for growing under glass.

Show.—Suitable for exhibition purposes, but requiring special care to bring the blooms to perfection.

Standard.—Suitable as a standard.

Shrubbery.—A rose that will hold its own if planted with other shrubs.

Summer.—Summer-flowering; has only one crop of flowers in the year; not perpetual.

Town.—Suitable for town or suburban gardens.

Wall.—A rose with long shoots which can be trained up a wall or side of a dwelling-house.

The Way to Prune the Variety.

The method of pruning and the time of year in which to prune the several sections are given in Chapter X. The following notes should be regarded as abbreviations of the instructions therein contained.

(1) *Hard.*—Thin out to the base all but from three to five shoots, and cut these back so as to leave two to three eyes on the plant.

(2) *Mod. Hard.*—Moderately hard. Thin out as No. 1, and cut these shoots back to about four to seven eyes.

(3) *Medium.*—Thin out as No. 1; leave four to seven shoots; shorten these shoots to about half their length.

(4) *Sparingly.*—Thin out as No. 1; leave four to seven shoots, which should be merely tipped.

(5) *Thin.*—No pruning required; thin out annually.

(6) *None.*—No pruning required; thin out every two or three years, just to keep the plant within bounds.

SELECTED ROSES

For explanation of abbreviations see pp. 308–310.

Name.	Description.
Adrian Riverchon	(H. Musk) Lambert, 1909.—White, edged rose.—Small single flowers produced in clusters.— Perpetual.— Bush.— Good in autumn.—(P. thin.)
Aglaia	(Mult.) Lambert, 1896.—Pale yellow.—Very vigorous pillar.—Pillar, arch.—Flowers freely on well-established plants.—Flowers produced on twiggy growth like the Banksian rose.—(P. none.)
Aimée Vibert	(N.) Vibert, 1828.—Pure white.—Vigorous.—Bush, hedge, standard.—Almost evergreen.—Late flowering.—(P. sparingly.)
Alberic Barbier	(Wich.) Barbier, 1900.— Yellow buds, opening cream.—Pillar, pergola, weeping standard.—Early.—Very vigorous.—One of the best of its class.—(P. none.)

Name.	Description.
Alpina	(Species) 1753.—Bright rose.—Vigorous.—Bush, shrubbery. — Single flowers. — Summer.—One of the earliest to flower.—(P. none.)—See Chap. VI.
Altaica	Sub-species of *R. rubiginosa*.—Lemon-white.—Large single flowers.—Bush, shrubbery.—Summer.—One of the earliest to flower.—(P. none.)—See Chap. IV.
American Pillar	(Wich.) Conard, 1909.—Bright rose.—Very vigorous pillar.—Pillar, pergola. — Summer.—A fine variety.—(P. none.)
Anne of Geierstein	(S. Brier) Keynes, 1894.—Crimson.—Very vigorous. — Bush, hedge. — Summer.—One of the best Penzance sweet-briers.—(P. none.)
Antoine Rivoire	(H.T.) Pernet-Ducher, 1896.—Pale creamy-buff. — Vigorous. — Garden, bedding.—Early, and good in autumn.—(P. medium.)
Augustus Hartmann	(H.T.) B. R. Cant, 1914. — Geranium-red.—Vigorous.—Exhibition, garden, pot.—(P. medium.)
Austrian Copper	(*R. lutea*) grown in England, 1596, by John Gerard.—Coppery-red.—Vigorous. — Garden, bush.—Very early flowering.—Single flowers produced on third year's growth.—Summer.—(P. none.) — See Chap. V. Sometimes known as "Lutea bicolor."
Austrian Yellow	(*R. lutea*) grown in England, 1596, by John Gerard. — Bright yellow.— Vigorous.—Garden, bush.—Very early flowering.—Single flowers produced on third year's growth. — Summer. — (P. none.)—See Chap. V.
Banksia Lutea	(Banksia) Abel, 1824. Nankeen yellow.—Very vigorous.—South or west wall. — Very early flowering.— Summer.— The small double yellow Banksian.—Flowers

Name.	Description.
	produced on third year's wood.—Summer. —(P. none.)—See Chap. IV.
Blanche Moreau	(Moss) Moreau-Robert, 1880. — Pure white. — Vigorous. — Bush. — The best white moss.—Summer.—(P. mod. hard.)
Blush Rambler	(Mult.) B. R. Cant, 1903.—Blush.—Very vigorous pillar.—One of the best of the multifloras.—Summer.—(P. none.)
Bouquet d'Or	("Dijon Tea") Ducher, 1872.—Buff-yellow. —Vigorous pillar.—Pillar, wall, standard. —(P. thin.)
Brunonii	(Species) White.—Musk perfume.—Very vigorous pillar.— Summer.— Otherwise known as Himalaya Brier.—(P. none.) See Chap. IV.
Carmine Pillar	Paul & Son, 1895.—Carmine.— Vigorous pillar. — Pillar, pergola. — Very early flowering.—Single flowered.—Summer.— (P. none.)
Caroline Testout	(H.T.) Pernet, fils-Ducher, 1890. — Light salmon-pink.—Vigorous.—Garden, standard, pot.—Good in autumn.—One of the very best.—(P. sparingly.)
Cécile Brünner	(Poly.) Ducher, 1880.—Blush, shaded pink. —Dwarf.—Garden, bedding. — Good in autumn.—(P. sparingly.)
Charles de Lapisse	(H.T.) Pale rose-pink.—Vigorous.—Garden, standard, pot.—Good in autumn.—A light-coloured Caroline Testout.—(P. sparingly.)
Château de Clos Vougeot	(H.T.) Pernet-Ducher, 1908.—Dark crimson, shaded scarlet.—Moderate.—Garden, bedding.—Fragrant.—(P. mod. hard.)
China, Common	(C.) Parsons, 1796.—Pale pink.—Vigorous. — Garden, hedge, bush. — Continuous blooming.—Known as the "Old Monthly." —(P. thin.)

Name.	Description.
Chrissie Mackellar	(H.T.) A. Dickson & Sons, 1913. Orange-pink. — Vigorous. — Garden. — Semi-double.—Good in autumn.—(P. medium.)
Claire Jacquier	(Mult.) Bernaix, 1887.—Nankeen-yellow.—Very vigorous pillar.—Pillar, wall.—Summer.—(P. none.)
Claudius	(H.T.) B. R. Cant & Sons, 1910. — Bright rose.—Vigorous.—Garden.—Fragrant.—(P. mod. hard.)
Clytemnestra	(H. Musk) Pemberton, 1915.—Salmon-pink cluster.—Perpetual. — Vigorous.—Bush.—(P. medium.)
Comtesse du Cayla	(C.) Guillot, 1902. — Nasturtium-red. — Vigorous.—Garden, bedding, buttonhole.—Fragrant.—One of the best Chinas.—(P. medium.)
Conrad F. Meyer	(Rug.) Frobel, 1900.—Silvery-rose.—Very vigorous. — Bush, pillar, shrubbery. — Early flowering.—Fragrant.—(P. sparingly.)
Constance	(H. Lutea) Pernet-Ducher, 1915. — Bright golden-yellow. — Vigorous. — Garden.—(P. mod. hard.)
Countess of Shaftesbury	(H.T.) Hugh Dickson, 1909. — Silvery-carmine.—Moderately vigorous.—Garden.—(P. mod. hard.)
Cramoisie Supérieure	(C.) Plantier, 1834. — Velvety-crimson.—Dwarf. — Garden, bedding. — Very free flowering.—(P. thin.)
Crested Moss	(Moss) Vibert, 1827.—Rosy-pink.—Vigorous.—Bush.—Summer.—(P. sparingly.)
Crimson Rambler	(Mult.) Turner, 1893.—Bright crimson.—Vigorous pillar.—Pillar, pergola.—Summer.—(P. none.)
Cynthia Forde	(H.T.) Hugh Dickson, 1909.—Rose-pink.—Vigorous.—Exhibition, garden.—A good pink rose.—(P. mod. hard.)

Name.	Description.
Danaë	(H. Musk) Pemberton, 1913. — Soft yellow cluster.—Perpetual.— Vigorous. — Bush, hedge.—Good in autumn.—(P. medium.)
Daphne	(H. Musk) Pemberton, 1912.—Blush-pink cluster.—Perpetual.— Vigorous. — Bush. —Good in autumn.—(P. medium.)
Delight	(Wich.)—Carmine.—Very vigorous pillar.—Pillar, pergola.—Summer.—Late flowering.—(P. none).
Dr Mitweg . . .	(H. Musk) Lambert, 1909.—Rosy-pink cluster.— Perpetual.— Vigorous.— Bush. —Good in autumn.—(P. mod. hard.)
Donald M'Donald .	(H.T.) A. Dickson & Sons, 1916.—Orange-carmine.—Vigorous.—Garden, bedding.—Free flowering.—(P. mod. hard.)
Dora van Tets . .	(H.T.) Leenders, 1913.—Velvety-crimson.—Moderately vigorous.—Garden, bedding, buttonhole.—Very fragrant.—Good in autumn.—(P. mod. hard.)
Dorothy Page-Roberts	(H.T.) A. Dickson & Sons, 1907.—Coppery-pink. — Vigorous. — Garden, bedding — Fragrant.—(P. medium.)
Dorothy Perkins .	(Wich.) Jackson & Perkins, 1901—Shell-pink —Very vigorous pillar.—Pillar, arch, pergola, weeping standard.—Summer.—Almost evergreen.—One of the best of this class.—(P. none.)
Duchess of Wellington	(H.T.) A. Dickson & Sons, 1909.—Deep saffron-yellow. — Vigorous. — Garden. — Fragrant.—(P. mod. hard.)
Earl of Warwick .	(H.T.) W. Paul & Son, 1904.—Salmon-pink. —Vigorous.—Garden, bedding.—Good in autumn.—(P. medium.)
Ecarlate	(H.T.) Boytard, 1907.—Light scarlet.—Moderately vigorous.—Garden, bedding.—Free flowering.—Semi-double.—A good bedding variety.—(P. mod. hard.)

Name.	Description.
Ellen Poulsen	(Poly.) Poulsen, 1912. — Cherry-rose. — Moderately vigorous. — Bedding, pot. — (P. mod. hard.)
Erna Teschendorff	(Poly.) Teschendorff, 1911. — Bright crimson cluster. — Moderately vigorous. — Bedding, pot. — A good pot rose. — (P. mod. hard.)
Ethel Malcolm	(H.T.) M'Gredy & Son, 1910. — Ivory-white. — Vigorous. — Garden, exhibition. — (P. mod. hard.)
Excelsa	(Wich.) Walsh, 1909. — Bright crimson. — Vigorous pillar — Pillar, pergola, weeping standard. — Late summer flowering. — (P. none.)
Fabvier	(C.) Laffay, 1832. — Bright crimson, with white centre. — Dwarf. — Garden, bedding. — The best crimson China. — Continuous blooming. — (P. sparingly.)
Félicité-et-Perpétué	(Evergreen) Jacques, 1828. — Creamy-white. — Very vigorous pillar. — Pillar, pergola, shrubbery. — Summer. — (P. none.) — See Chap. V.
Fellenberg	(N.) Fellenberg, 1857. — Rosy-crimson. — Vigorous. — Garden, bush. — Good in autumn. — (P. sparingly.)
Florence Pemberton	(H.P.) A. Dickson & Sons, 1902. — Creamy-white, tinted pink. — Vigorous. — Garden, bush, standard. — Free flowering. — (P. sparingly.)
Frau Karl Druschki	(H.P.) Lambert, 1900. — Pure white. Very vigorous. — Garden, pillar, bush, standard, pot. — The best white for all purposes. — (P. sparingly.)
Galatea	(H. Musk) Pemberton, 1914. — Stone-white cluster. — Perpetual — Vigorous. — Bush. — (P. medium.)

NAME.	DESCRIPTION.
G. C. Waud . . .	(H.T.) A. Dickson & Sons, 1908.—Rose, shaded orange.—Moderately vigorous.—Garden, exhibition. — Fragrant. — (P. mod. hard.)
General M'Arthur .	(H.T.) Hill, 1905. — Bright crimson. — Vigorous.—Garden, bedding, standard.—Good in autumn.—Fragrant.—A good bedding rose.—(P. mod. hard.)
George Dickson . .	(H.T.) A. Dickson & Sons, 1912.—Deep velvety-crimson.—Very vigorous. — Garden, standard.—Fragrant.—(P. medium.)
Gloire de Dijon . .	("Dijon Tea") Jacotot, 1850.—Buff-yellow.—Garden, bush, pillar, standard, wall, town.—A well-known rose.—(P. thin.)
Golden Emblem . .	(H. Lutea) M'Gredy & Son, 1916.—Golden-yellow.—Vigorous.—Garden.—(P. mod. hard.)
Golden Ophelia . .	(H.T.) B. R. Cant & Sons, 1917.—Yellow, edged cream.—Vigorous.—Garden, pot.—(P. mod. hard.)
Gorgeous	(H.T.) Hugh Dickson, 1915.—Orange-yellow.—Vigorous.—Garden, exhibition.—A distinct shade of colour.—(P. mod. hard.)
Grüss an Teplitz .	(H.T.) Geschwind, 1897.—Bright crimson.—Very vigorous.—Bush, pillar, standard, hedge.—Fragrant.—A good autumn rose.—(P. thin.)
Grüss an Zabern	(Mult.) Lambert, 1905.—Snow-white cluster.—Very vigorous pillar.—Pillar, pergola.—Summer.—Early flowering.—(P. none.)
Gustave Grünerwald	(H T.) Lambert, 1903.—Carmine-pink.—Vigorous. — Garden, standard. — Good autumnal.—(P. sparingly.)
Gustave Regis . .	(H.T.) Pernet, fils-Ducher, 1890 — Nankeen-yellow.—Very vigorous.—Garden, bush, standard.—One of the best buttonhole roses.—Good in autumn.—(P. thin.)

Name.	Description.
Harrisonii	(Lutea) Harrison, 1830.—Golden-yellow.—Very vigorous.—Bush, dwarf hedge.—Summer.—(P. none.)
Hebe's Lip	(Prov.)—White, edged with purple.—Vigorous.—Garden, bush.—Summer.—(P. sparingly.)
Hiawatha	(Wich.) Walsh, 1906.—Deep crimson, white centre, golden stamens—Very vigorous pillar.—Pillar, pergola, weeping standard.—Summer.—Late flowering.—(P. none.)
Hugh Dickson	(H.P.) Hugh Dickson, 1904.—Crimson, shaded scarlet.—Very vigorous.—Garden, standard, pegging down.—Fragrant.—Good in autumn.—(P. medium.)
Irish Elegance	(H.T.) A. Dickson & Sons, 1905.—Shades of apricot, buds orange-scarlet.—Very vigorous.—Garden, bush.—Single flowered.—(P. sparingly.)
Irish Fireflame	(H.T.) A. Dickson & Sons, 1913.—Orange-crimson.—Vigorous.—Garden.—Single flowered.—(P. sparingly.)
J. B. Clark	(H.T.) Hugh Dickson, 1905.—Deep scarlet, shaded crimson.—Very vigorous.—Bush, pillar, standard, pegging down.—A good pillar rose.—(P. thin.)
J. L. Mock	(H.T.) Leenders, 1909.—Carmine, reverse of petals silvery.—Vigorous.—Garden, exhibition.—Good in autumn.—(P. mod. hard.)
Jean Girin	(Wich.).—Pink rosette—Very vigorous pillar.—Pillar, pergola.—Summer.—Very late flowering.—Large trusses.—(P. none.)
Jersey Beauty	(Wich.) Manda, 1899.—Pale yellow.—Very vigorous pillar.—Pillar, pergola, creeping.—Summer.—Single flowered.—Fine foliage, almost evergreen.—(P. none.)

Name.	Description.
Jessie	(Poly.) Merryweather & Sons, 1909.—Crimson-scarlet.— Dwarf.— Bedding, edging, pot.—(P. mod. hard.)
Joan	(H.T.) Pemberton, 1919.—Copper, peach bud.— Dwarf.—Bedding, pot.— (P. mod. hard.)
Joanna Bridge . .	(H.T.) Hicks, 1916.—Straw-yellow, with pink shading.—Vigorous.—Garden, bedding.— Semi-double.— Good in autumn. —(P. sparingly.)
Joseph Hill . . .	(H.T.) Pernet-Ducher, 1903. — Salmon-pink, shaded yellow.— Vigorous.— Garden, pot.—Early and late flowering.—(P. mod. hard.)
K. of K.	(H.T.) A. Dickson & Sons, 1917. — Brilliant scarlet-crimson. — Moderately vigorous.— Semi - single.— Garden.— (P. mod. hard.)
King George V. .	(H.T.) H. Dickson, 1912.—Rich dark crimson.—Very vigorous.—Garden, standard, pegging down.—Fragrant.—Good in autumn.—(P. medium.)
Lady Alice Stanley	(H.T.) M'Gredy & Son, 1909.— Outside petals deep coral-rose, inside pale flesh, distinct colour.— Vigorous.— Garden, bedding, pot, exhibition.—Fragrant.—A good rose.—(P. mod. hard.)
Lady Ashtown . .	(H.T.) A. Dickson & Sons, 1904.— Deep pink.—Vigorous.— Garden, bedding.—(P. hard.)
Lady Curzon . . .	(D.) Turner, 1902. – Pale pink.—Vigorous. —Bush, pillar.—Large single flowered.— Summer.—(P. none.)
Lady Hillingdon .	(T.) Lowe & Shawyer, 1910.— Orange-yellow. — Vigorous. — Garden, bedding, pot, buttonhole.—One of the best yellow roses.—(P. mod. hard.)

Name.	Description.
Lady Pirrie	(H.T.) Hugh Dickson, 1910.—Coppery-salmon.—Vigorous.—Garden, bedding, pot.—Good in autumn.—A fine decorative rose.—(P. medium.)
Lady Ursula	(H.T.) A. Dickson & Sons, 1908.—Flesh-pink.—Vigorous.—Garden, exhibition.—Good in autumn.—(P. medium.)
Lady Waterlow	(H.T.) Nabonnaud, 1903.—Pale salmon-blush.—Semi-pillar.—Bush, pillar, wall, pegging down.—Semi-double.—(P. sparingly.)
La Tosca	(H.T.) Schwartz, 1900.—Salmon-blush.—Vigorous.—Garden, bush, standard, town.—Good in autumn.—(P. medium.)
Laurette Messimy	(C.) Guillot, 1887.—Pale rose with yellow base.—Vigorous.—Garden, bedding.—(P. sparingly.)
Lemon Pillar	(H.W.) Paul & Son, 1915.—Sulphur-yellow.—Very vigorous.—Semi-pillar.—(P. sparingly.)
Léopoldine d'Orléans	(Evergreen) Jacques, 1829.—White tipped red, cluster.—Very vigorous pillar.—Pillar, pergola, shrubbery.—Summer.—(P. none.)
Liberty	(H.T.) A. Dickson & Sons, 1900.—Velvety-crimson.—Moderate.—Garden, bedding, pot, buttonhole.—Especially good for forcing.—(P. mod. hard.)
Lieut. Chauré	(H.T.) Pernet-Ducher, 1910.—Velvety crimson.—Vigorous.—Garden, bedding, pot.—Fragrant.—(P. mod. hard.)
Louise Catherine Breslau	(H. Lutea) Pernet-Ducher, 1912.—Shrimp-pink, shaded copper.—Vigorous.—Garden.—(P. mod. hard.)
Lyon Rose	(H. Lutea) Pernet-Ducher, 1907.—Salmon-rose, suffused yellow.—Moderately vigorous.—Garden, pot, exhibition.—(P. mod. hard.)

Name.	Description.
Mabel Drew . . .	(H.T.) A. Dickson & Sons, 1911.—Cream-yellow.—Vigorous.—Garden, exhibition.—(P. medium.)
Macartney . . .	(Species) Lord Macartney, 1795.—White, single.—Vigorous pillar.—Wall.—Tender, does well on a warm wall.—Late flowering.—Summer.—(P. none.)—See Chap. IV.—Bracteata.
Mme. Abel Chatenay	(H.T.) Pernet-Ducher, 1895.—Salmon-pink.—Vigorous.—Garden, bedding, pot, town.—One of the best.—(P. medium.)
Mme. Alfred Carrière	(H.N.) Schwartz, 1879.—White, lemon base.—Vigorous pillar.—Semi-pillar, bush, wall.—Good in autumn.—(P. sparingly.)
Mme. E. Resal . .	(C.) Guillot, 1895.—Coppery-rose, shaded orange.—Vigorous.—Garden, bedding.—A good China.—(P. sparingly.)
Mme. Edouard Herriot	(H. Lutea) Pernet-Ducher, 1913.—Coral-red, shaded yellow and scarlet.—Distinct colour.—Semi-double.—Vigorous.—Garden, bedding, pot.
Mme. Jules Bouché	(H.T.) Crobier, 1911.—Porcelain-white.—Vigorous.—Garden, bedding.—A good rose.—(P. medium.)
Mme. Leon Pain .	(H.T.) Guillot, 1904.—Silvery-rose.—Vigorous.—Garden, bedding, standard.—(P. medium.)
Mme. Ravary . .	(H.T.) Pernet-Ducher, 1899.—Pale orange-yellow.—Vigorous.—Garden, bedding, pot, town.—(P. medium.)
Maiden's Blush . .	(Alba) Kew, 1797.—Flesh, deeper centre.—Vigorous.—Bush.—Fragrant.—Summer.—(P. thin.)
Maman Cochet . .	(T.) Cochet, 1893.—Deep flesh, shaded fawn.—Garden, standard, exhibition.—(P. sparingly.)

Name.	Description.
Maréchal Niel	(N.) Pradel, 1864.—Bright golden-yellow.—Vigorous pillar.—Wall, pot.—Best under glass.—Fragrant.—(P. thin.)—See Chap. VI.
Marie van Houtte	(T.) Ducher, 1871.—Lemon-yellow, edged rose.—Vigorous.—Garden.—Good in autumn.—(P. sparingly.)
Melanie Soupert	(H.T.) Pernet-Ducher, 1905.—Salmon-yellow.—Vigorous.—Garden, bedding, pot.—Best in cool season.—A good rose.—(P. medium.)
Miriam	(H.T.) Pemberton, 1919.—Capucine-yellow, distinct.—Vigorous.—Garden, pot.—Good in autumn.—(P. mod. hard.)
Moonlight	(H. Musk.) Pemberton, 1913.—Lemon-white cluster.—Perpetual.—Vigorous.—Bush, hedge.—Good in autumn.—(P. medium.)
Moschata Nivea	(Species) Hermann.—White, tinted pink.—Vigorous pillar.—Pillar, bush.—Single flowered.—Summer.—(P. none.)—See Chap. IV.
Moss, Common	(Moss) 1596.—Pale rose.—Vigorous.—Garden, bush.—Summer.—The best pink moss.—(P. mod. hard.)
Moyesii	(Species.) Veitch, 1909.—Brick-red, distinct.—Vigorous.—Bush.—Summer.—Small single flower.—A striking variety.—(P. none.)
Mrs A. E. Coxhead	(H.T.) M'Gredy & Son, 1910.—Claret-red, shaded vermilion.—Vigorous.—Garden.—Very fragrant.—A good October rose.—(P. medium.)
Mrs Alfred Tate	(H.T.) M'Gredy & Son, 1909.—Coppery salmon.—Vigorous.—Garden, bedding.—(P. mod. hard.)
Mrs Ambrose Ricardo	(H. Lutea) M'Gredy & Son, 1914.—Honey-yellow.—Vigorous.—Garden.—(P. mod. hard.)

NAME.	DESCRIPTION.
Mrs Cutbush	(Poly.) W. Cutbush & Son, 1906.—Bright deep pink. — Dwarf. — Garden, bedding, pot. — Continuous bloomer. — (P. mod. hard.)
Mrs Edward Powell	(H.T.) Bernaix, 1911.—Scarlet, shaded crimson.—Vigorous.—Garden, bedding.—Fragrant.—Good in autumn.—(P. mod. hard.)
Mrs Foley Hobbs	(T.) A. Dickson & Sons, 1910.—Ivory-white.—Mod. vigorous.—Exhibition.—(P. mod. hard.)
Mrs F. W. Flight	(Mult.) Cutbush & Son, 1905. — Deep pink cluster.—Very vigorous pillar.—Pillar, pergola.—Summer.—(P. none.)
Mrs John Laing	(H.P.) Bennett, 1887.—Rosy-pink.—Vigorous.—Garden, pot, exhibition.—Town. — Fragrant.—(P. mod. hard.)
Mrs Joseph H. Welch	(H.T.) M'Gredy & Son, 1911.—Rose-pink, deep-pointed.—Very vigorous.—Garden, exhibition.—(P. medium.)
Mrs R. D. M'Clure	(H.T.) Hugh Dickson, 1913.—Salmon-pink, large, globular.—Moderately vigorous.—Garden, exhibition.—(P. mod. hard.)
Mrs Theodore Roosevelt	(H.T.) Hill, 1902.—Creamy-white, shaded rose.—Vigorous.—Garden, exhibition.—(P. mod. hard.)
Mrs W. Christie-Miller	(H.T.) M'Gredy & Son, 1909.—Blush, outside of petals deep rose.—Vigorous.—Garden, bedding.—Good in autumn.—(P. mod. hard.)
Mrs Wemyss Quin	(H.T.) A. Dickson & Sons, 1914.—Canary-yellow.—Vigorous.—Garden. — Good in autumn.—A good rose —(P. medium.)
Multiflora Simplex	(Species) from Japan, 1781.—Pure white cluster, with golden stamens. — Very vigorous pillar.—Pillar, pergola, hedge.—Summer.—(P. none.)—See Chap. IV.

Name.	Description.
Nellie Parker	(H.T.) Hugh Dickson, 1916.—Creamy-white, flushed pink.—Vigorous.—Garden, exhibition.—(P. mod. hard.)
Old Gold	(H.T.) M'Gredy & Son, 1913.—Reddish orange, semi-double.—Moderately vigorous.—Garden, buttonhole.—(P. medium.)
Ophelia	(H.T.) W. Paul & Son, 1912.—Salmon-flesh.—Vigorous.—Garden, pot, exhibition.—Good under glass.—(P. medium.)
Orleans Rose	(Poly.) Levavasseur, 1919.—Rosy-crimson cluster.—Vigorous.—Dwarf, bushy.—Garden, bedding.—Good in autumn.—(P. medium.)
Paul's Scarlet Climber	(Hybrid Wich.) W. Paul & Son, 1916.—Intense scarlet.—Small semi-double flowers.—Vigorous pillar.—Pillar, pot.—(P. sparingly.)
Paul Transom	(Wich.) Rose-coloured double rosette flowers.—Very vigorous pillar.—Pillar, pergola, bank.—Summer.—Fragrant.—(P. none.)
Pax	(H. Musk) Pemberton, 1918.—White, with golden stamens, lemon-tinted bud.—Vigorous.—Garden, bedding.—Very fragrant.—Many flowers on single stem.—Good in autumn.—(P. medium.)
Pemberton's White Rambler	(Mult.) Pemberton, 1914.—Pure white, large cluster.—Very vigorous pillar.—Pillar, pergola.—Summer.—The best white multiflora.—(P. none.)
Persian Yellow	(Lutea) Willock, 1838.—Deep golden-yellow.—Vigorous.—Garden, bush.—Summer.—(P. none.)
Pharisaer	(H.T.) Hinner, 1901.—Rosy-white, shaded pale salmon.—Vigorous.—Garden, bedding, exhibition.—A good rose.—(P. medium.)

Name.	Description.
Prince de Bulgarie	(H.T.) Pernet-Ducher, 1902.—Pale rose, shaded apricot. — Vigorous. — Garden, bedding, pot, town.—Fragrant.—A good rose.—(P. medium.)
Princess Mary	(H.T.) Hicks, 1915.—Scarlet-crimson.—Single.—Moderately vigorous. — Garden, decorative.—(P. mod. hard.)
Prosperity	(H. Musk) Pemberton, 1919.—White, tinted pink.—Large cluster.—Garden, bush.—Perpetual, flowers to late autumn—(P. medium.)
Rayon d'Or	(H. Lutea) Pernet-Ducher, 1910.—Bright yellow.—Moderately vigorous.—Garden, bedding.—A striking colour.—(P. mod. hard.)
Red Damask	(D.) 1596. — Red. — Vigorous. — Garden, bush.—Very fragrant.—Summer. — (P. sparingly.) A self-coloured form of Rosa Mundi.
Red Letter Day	(H.T.) A. Dickson & Sons, 1914.—Scarlet-crimson.—Semi-single.—Vigorous.—Garden, bedding.—Continually in bloom.—(P. medium.)
Richmond	(H.T.) Hill, 1905. — Bright crimson. — Vigorous.—Garden, bedding, pot, buttonhole.—Fragrant.—Good under glass.—(P. mod. hard.)
Rosa Mundi	(D.) Red, striped white.—Vigorous.—Garden, bush.—Very fragrant.—The best of the striped roses, sometimes incorrectly called "York and Lancaster."—Summer.—(P. sparingly.)
Rubrifolia	(Species) Swainson, 1803.—Soft rose, small single flowers.—Very vigorous.—Bush, shrubbery.—Summer.—Stem and foliage distinct in colour. — (P. none.)—See Chap. IV.

NAME.	DESCRIPTION.
Rugosa alba simplex	(Rug.) Thunberg, 1784.—White.—Vigorous.—Bush, hedge, shrubbery, town.—Single.—A white sport from *rubra*.—(P. none.)
Rugosa rubra . .	(Species) Thunberg, 1784.—From Japan.—Deep rose, shaded violet.—Very vigorous.—Bush, hedge, shrubbery, town.—Single.—Summer.—(P. none.)—See Chap. IV.
Safrano	(T.) Beauregard, 1839. — Apricot-yellow.—Moderately vigorous. — Garden, pot, buttonhole.—(P. sparingly.)
Seagull . .	(H. Musk) White, with golden stamens.—Large clusters.—Very vigorous pillar.—Pillar, pergola, bush.—Very fragrant.—Summer.—Early flowering.—A good rose —(P. none.)
Sinica Anemone .	(Hybrid of Species) Schmitt, 1895. — Silvery-pink, shaded rose.—Very vigorous.—Single.—Bush, wall, sheltered position, warm aspect. — Very early flowering.—(P. none.)
Sulphurea	(T.) W. Paul & Son, 1900.—Bright sulphur-yellow.—Moderately vigorous. — Garden, bedding.—(P. mod. hard.)
Sunburst	(H.T.) Pernet-Ducher, 1911. — Orange to creamy-white. — Moderately vigorous.—Pot.—One of the best under glass.—(P. mod. hard.)
The Garland . .	(H. Musk) Wells.—Blush, changing to white, cluster.—Vigorous pillar.—Pillar, pergola.—Summer. —(P. none.)
Thisbe	(H. Musk) Pemberton, 1918. — Chamois-yellow rosette cluster.—Perpetual flowering.—Very vigorous.—Bush.—(P. medium.)
Trier	(H. Musk) Lambert, 1904. — Creamy-white, suffused pink, cluster. — Very vigorous. — Bush, standard, hedge. — Perpetual flowering.—(P. sparingly.)

Name.	Description.
Una	(Canina) Paul & Son, 1900.—Pale buff.—Vigorous pillar.—Pillar, hedge.—Large, handsome, semi-single blooms.—Distinct.—Summer.—(P. none.)
Warrior	(H.T.) W. Paul & Son, 1906.—Crimson, shaded blood-red.—Vigorous.—Garden.—Good in autumn.—(P. medium.)
White Maman Cochet	(T.) Cook, 1897. — White, tinted lemon.—Vigorous. — Standard, exhibition. — (P. mod. hard.)
William Allen Richardson	(N.) Veuve Ducher, 1878.—Deep orange-yellow, white edge.—Vigorous pillar.—Garden, pillar, wall, standard, buttonhole.—Distinct in colour.—(P. thin.)
W: R: Smith . . .	(T.) Henderson, 1908.—White, tinged blush.—Vigorous.—Garden, standard, exhibition.—(P. mod. hard.)
York and Lancaster	(D.) Pale rose or white, sometimes half of each, or streaked. — Very vigorous.—Typical damask perfume.—Bush.—Summer.—(P. none.)—See Chap. I.
Zephirine Drouhin .	(H.B.) Bizot, 1873.—Bright carmine-pink.—Small semi-double cluster. — Vigorous pillar.—Perpetual.—Bush, pillar, hedge.—Thornless. — Very fragrant. — Good in autumn.—(P. thin.)

Some of the Best Roses in the Foregoing List classified for Special Purposes

For General Garden Culture

Caroline Testout.
Charles de Lapisse.
Earl of Warwick.
Florence Pemberton.
Frau Karl Druschki.
General M'Arthur.
Gustave Grünerwald.
Hugh Dickson.
Lady Alice Stanley.
Lady Pirrie.

Mme. Abel Chatenay.
Mme. Jules Bouché.
Melanie Soupert.
Mrs Wemyss Quin
Pax.
Pharisaer.
Prince de Bulgarie.
Red Letter Day.

For Bedding and Massing

Comtesse du Cayla.
Ecarlate.
General M'Arthur.
Lady Alice Stanley.
Lady Hillingdon.
Lady Pirrie.
Mme. Edouard Herriot.
Mrs Edward Powell.
Prince de Bulgarie.
Red Letter Day.

For House Decoration and Buttonholes

Chrissie Mackellar.
Comtesse du Cayla.
Duchess of Wellington.
General M'Arthur.
Gustave Regis.
Lady Hillingdon.
Lady Pirrie.
Mme. Edouard Herriot.
Mrs Wemyss Quin.
Richmond.

For Pergolas, Tall Pillars, and Screens

Summer Flowering Varieties

Alberic Barbier
American Pillar.
Dorothy Perkins.
Excelsa.
Hiawatha.
Jean Girin.
Pemberton's White Rambler.
Seagull.

For Medium Pillars

Perpetual Flowering Varieties

Grüss an Teplitz.
Lady Waterlow.
William Allen Richardson.
Zephirine Drouhin.

For Bushes

Perpetual Flowering Cluster Roses

Adrian Riverchon.
Danaë.
Moonlight.
Prosperity.
Trier.

For Growing under Glass

Lady Hillingdon.
Lady Pirrie.
Mme. Abel Chatenay.
Mme. Edouard Herriot.
Ophelia.
Rayon d'Or.
Richmond.
Sunburst.

Varieties Good in Autumn

Caroline Testout.
General M'Arthur.
Gustave Grünerwald.
Hugh Dickson.
Lady Pirrie.
Mme. Jules Bouché.
Moonlight.
Mrs A. E. Coxhead.
Mrs Edward Powell.
Mrs Wemyss Quin.
Pax.
Prosperity.

Fragrant Roses

Château de Clos Vougeot.
Claudius.
Dora van Tets.
General M'Arthur.
Hugh Dickson.
Lady Alice Stanley.
Lieut. Chauré.
Mrs A. E. Coxhead.
Mrs John Laing.
Pax.

For Specimen Blooms

Augustus Hartmann.
Caroline Testout.
Earl of Warwick.
Florence Pemberton.
Frau Karl Druschki.
George Dickson.
Hugh Dickson.
Mabel Drew.
Mrs Foley Hobbs.
Mrs John Laing.
Mrs Joseph H. Welch.
Mrs R. D. M'Clure.

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